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Railway Age

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EDITORIAL

Railway Age

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The question of standards for electric traction equipment is one that will demand attention in this country in the not far distant future. At present there are

Electric Traction Standards

few things in a sufficiently advanced state of development to warrant standardization, but it may now be possible to define certain limits to which standardization may properly be carried. In an article in this issue George Gibbs, chief engineer of electric traction for the Long Island, points out many of the factors which govern and limit standardization and offers a number of suggestions. The letter is written to the Electrification of Railways Advisory Committee in England, and speaks specifically of British railways, but the statements as set forth apply equally well to railroads in the United States. An earnest and intelligent effort to outline standards for this equipment may not immediately produce tangible results, but it will aid materially in crystalizing the information at hand and will give the railroad operator a more definite idea of the possibilities and limitations of electric traction.

The passage of the railroad funding bill, which is expected when the Senate convenes after its recess, has been regarded

The Conference on Unemployment

in many quarters as the stimulus which, added to the already hopeful business outlook, would bring eventually a return to normal economic conditions. If the "thawing" of the railways' and the equipment companies' "frozen credits" is likely to be of any such general benefit as this, then it would seem that the carriers and supply concerns should play an important part in the President's conference on unemployment to be held in Washington on Monday. From the preliminary list of delegates, the very opposite is apparently to be the case. One delegate has been announced to represent the railroads but none to represent the supply interests. The prominence and ability of the delegates chosen so far cannot be questioned. They are men and women who are leaders in many fields of activity all over the United States. Still, in view of the admitted importance of the railroads and the equipment concerns in the industrial fabric of the country, it would seem that special attention to means of promoting their activity would be one of the most potentially fruitful subjects to which the President's conference could devote its attention.

The activities of the Railway Accounting Officers' Association have in recent months been the subject of considerable

A Digest of Labor Decisions

favorable comment in the columns of the *Railway Age*. The reason has been that the R. A. O. A. is showing itself to be at present one of the liveliest organizations—some would say the liveliest organization—in the railway field. Because of the calibre of the association's membership and the ability of its official staff, the association has been able to realize in rather praise-

worthy fashion on the increasing importance of the railway accounting officer. Another evidence of its enterprise is in the booklet, a review of which appears on another page of this issue, published this week by the association and entitled, "Index-Digest of Decisions of United States Labor Board." The booklet of 88 pages is a digest of the Labor Board decisions to September 1, 1921, namely Nos. 1 to 222. The digest has been compiled by the Bureau of Information of the Southeastern Railways. It is given circulation by the Railway Accounting Officers' Association, for the use of accounting officers, but there will be very few railway officers in all departments who will not be assisted measurably by the service which has been rendered by the publication of the digest.

Harry W. Forman, writing in response to our editorial of September 10, presents what political orators would call a

Why Require Signatures to Train Orders?

ringing argument for the general use of train-order Form 19. To those who do not know Mr. Forman, it is proper to say that his 40 years' experience in train dispatching is somewhat different from ordinary experience in that he has constantly had to justify his utterances. Both his findings of fact and his opinions concerning probabilities can be fully accepted as having survived all possible criticism. If he has ever misinterpreted the facts of experience or has ever proposed anything for the future without keeping his feet firmly set on the ground, he has been through whatever fires were necessary to expose his error. In our editorial, we suggested that those operating officers who wish to promote the more general use of Form 19 would do well carefully to gather up the experience of roads all over the United States. The present letter suggests that this process might well begin at the far end of the country! That would give, as it were, a flying start. The heading on Mr. Forman's letter was put on by the editor, and the use of "universal" may perhaps be criticized by some. But are not the necessary exceptions to the use of Form 19 really very rare? A dispatcher who counts the orders that he has issued by the hundreds of thousands should be listened to with care.

The Roadmasters' convention held in Chicago this week was in every way a success and serves as a fitting milestone for

The Roadmasters' Convention

the steady progress which this organization has made during the last decade. The attendance has increased, the membership has grown and the character of the program and calibre of papers and reports presented bear emphatic evidence that the destiny of this association has been in skilled hands. It is a curious fact that the train of extraordinary times which have been visited upon the railroads of this country during the past five years have in no case interrupted or seriously interfered with the work of the three great associations of maintenance of way officers. The conventions of the Ameri-

can Railway Engineering Association, the Roadmasters' and Maintenance of Way Association and the American Railway Bridge and Building Association have taken place without break during this period and with practically no modification from established customs. Perhaps this may be ascribed largely to the businesslike procedure which has characterized the conventions of these three associations—two and one-half to three solid days of technical discussion followed perhaps by a half day's inspection trip to work of specific interest to the men in question. Entertainment and recreation have played but little part in these meetings. It is also possible that the unbroken success of the conventions may be explained by the happy faculty of those in charge to suit the program each year to the particular need of the times, a fact that was appreciated in no small measure by the United States Railroad Administration, which availed itself, particularly in the case of the Roadmasters', of the opportunity to bring home a message of conservation and economy so imperative at that time. Of still greater importance is the attitude which has been generally taken by the railway managements who on the whole have encouraged attendance at the meetings on the part of their officers. Nor is it out of place to refer to the work done by the railway supply associations which have not only served as a guiding hand in directing the efforts of the supply manufacturers along legitimate channels, but have, moreover, exerted no small degree of influence in the administration of the association affairs.

For the first time in a year the railroads now report a reduction in the number of bad order freight cars. This is shown

<p>Reduction in Bad Order Cars</p>	<p>by the semi-monthly report compiled by the Car Service Division of the American Railway Association for the period ending September 1, when the number of cars needing repairs was 374,087, or 16.2 per cent of the total, as compared with 16.6 per cent, or 382,440, on August 15. Of the box cars the percentage needing repairs on September 1 was 17.8 per cent, as compared with 18.2 per cent on August 15. There was also a reduction in the number of bad order coal cars. The recent increases in the volume of traffic handled, particularly grain, has made it necessary to put more cars in service while giving the carriers some increase in revenue with which to do so, and the reduction in wages which went into effect on July 1 has also increased the ability of the roads to increase their repair forces. The bad order car situation is not one to brag about particularly, for the decrease in cars needing repairs in two weeks was less than the decrease in serviceable surplus cars in one week, but the fact that an improvement is being shown at last is a source of satisfaction. For the week ending September 8 there were 237,972 surplus cars in serviceable condition. For the first seven months of 1921 for which the Interstate Commerce Commission has reported the railroad earnings and expenses, the railroads expended \$737,000,000 for maintenance of equipment, which was \$111,000,000 less than they had expended on this account in the corresponding period of 1920. For the same period there was a reduction of \$113,000,000 in expenditures for maintenance of way. Part of the reduction in expenses represents, as would naturally be expected, real economy in maintenance and a part of it, too, represents the lessened volume of business, but the extent to which the railroads have been obliged to curtail and even defer maintenance work is indicated by the fact that the reductions made in these accounts amount to more than the \$213,000,000 net operating income which the railroads of the country had to show for their operations during the first seven months of the current year.</p>
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Pressing Problems of Management

THE RAILWAYS are approaching normal in respect to net operating income. Their net operating income of \$69,-485,000 in July is the largest they have made under the present rates except in September, 1920, when they earned \$75,310,000, and in October, 1920, when they earned \$86,-500,000. It represents a return at the annual rate of 4.50 per cent, which has been exceeded under the present rates only in October, when the return was on an annual basis of 4.6 per cent.

While the results of operation in July are encouraging, the greatest mistake which could be made in interpreting them would be to infer they mean that the railroad problem is anywhere near solved. The net operating income obtained was chiefly the result of a reduction in operating expenses, as compared with July, 1920, of 29.50 per cent. This bespeaks a marked increase in operating efficiency, but it also bespeaks a very large amount of deferred maintenance. Before the railroad problem can be solved the existing physical properties must be rehabilitated by largely increased expenditures for maintenance. This will involve a large increase in operating expenses, and these increased expenditures for maintenance ought to be made as rapidly as the financial condition of the individual carriers makes practicable. To postpone increased expenditures for maintenance longer than is necessary would be artificially to increase the net operating income and give to those who are demanding general reductions of rates a strong but fallacious argument.

In addition to taking up deferred maintenance as rapidly as practicable, planning should be begun for expanding the capacity of the properties. The revival of general business may be slow, but conditions indicate that it is not only sure to come, but already has begun. General business began sharply to decline in the early spring of 1920 and continued rapidly downward until May, 1921. It was then practically stationary for about two months, and recently it has been increasing. With allowance for the ordinary seasonal changes, the increase in general business activity, if we may judge by past experience, will continue at an accelerating rate. One of the effects will be a corresponding increase in railway traffic. Other things being equal, the railways make the largest profits when they are able to handle all the business offered without congestions and delays. The managements should spare no reasonable effort to get their organizations and properties in shape satisfactorily to handle a large traffic when it comes.

No less important than the problems of administration and operation which must be solved to get the railways ready to handle a larger business are those presented by their public relations. They are confronted with nation-wide demands for reductions of rates. The charge so often heard that the present rates are stifling business and preventing increase in railway traffic and earnings are refuted by the facts regarding the current movement of traffic. It is beyond question, however, that there are at present many bad adjustments of rates and many rates that are excessive. Readjustments to remedy these conditions should be made with the greatest practicable facility as a matter of railroad policy and of public policy. They are needed both to increase the gross and net earnings of the railroads, and to improve public opinion by meeting reasonable public demands.

There is a real and manifest danger, however, that public opinion and public authorities will insist upon reductions of rates being made faster than would be fair to the railways or beneficial to the public. The prime necessity of the situation is the restoration of railroad earning capacity and railroad credit. This can be done only by bringing about and maintaining a relationship between railway expenses and earnings which will enable the carriers to earn an adequate net return. It is the function and duty of the managements to make the

utmost efforts to get and keep the operating expenses on a reasonable basis. But this will not restore earning capacity and credit unless rates and total earnings can be made to provide a reasonable margin between expenses and earnings.

There is but one way to insure that the total earnings of the railways will not be unreasonably reduced, and that is to educate public opinion regarding the railroad situation. There is but one way to educate public opinion, and that is to present the facts about the railroad situation to the public throughout the country so energetically, skillfully and persistently that the public cannot evade or misunderstand them.

We greatly fear many high railway officers are today as far from understanding the public sentiment of the country in regard to the railroads as the public is from understanding the railroad situation. The cold truth is that a large part, if not a majority, of the more intelligent people of the country believe the following about the railroad situation:

(1) That present railway rates, both passenger and freight, are excessive and that extensive reductions ought to be made in the near future.

(2) That many of the managers of the railways have lost their "punch" and the roads are not being as efficiently and economically operated as they should be; that the managers have begun to run to Congress, the Interstate Commerce Commission and other government bodies for relief which they could get themselves if they would show the same initiative and energy as earlier generations of railway managers.

(3) That the railways have some kind of "guarantee" from the government and have not been participating in the losses suffered during the present depression by other classes of business concerns.

(4) That, while the railway managers admit that many maladjustments of rates now exist and that many rates are excessive, they are not making efforts rapidly to change the rate structure to make it meet present business needs.

These are but a few things a large part of the public believes in regard to the present railroad situation, which show a widespread spirit of mistrust. Eighteen months ago, when the railways were returned to private operation, public sentiment toward them was favorable. Today it is not favorable. This is a fact which it is not pleasant to contemplate, but which the railway managers should frankly recognize and act accordingly. Why does this public sentiment exist? First, because, whether reasonably or otherwise, the public believes the present railway rates are too high and in a spirit of resentment has become willing to believe almost anything unfavorable it is told about the managements. Secondly, because the railways never have done, and are not now doing, what they should have done and should be doing to educate public opinion. They have done a great deal of effective public relations' work through the Association of Railway Executives. The main thing which always has been needed, however, is skillful and effective work by the managements of the individual railways in dealing with public opinion in their own territories.

So long as the public regulates the railways the results of railway management will be largely determined by the way the railways are regulated. The public will determine how they will be regulated. Therefore it is just as essential a part of railway management to educate public opinion regarding the railroad situation as it is to run trains. Unfortunately, there are not more than a dozen of the large railways whose managements have recognized this fact and established and maintained departments especially to handle their public relations. It is as much a part of the duty of the railway managers to defend the railways as it is to operate them, and the railway problem will never be solved until this duty is more fully and adequately recognized.

The railways are entering a new period in their history.

The successful management of the properties will require in

future as much administrative ability and energy as in the past, and more statesmanship and diplomacy in dealing with public opinion than ever have been shown. The future of the railways is in the hands of their present managers. If they cannot be successfully operated and developed under the present system of regulation, then it is the duty of their managers to so deal with public opinion and public authorities that the present system of regulation will be changed.

Why Are Railway Employees Thus Lied To?

A STATEMENT appearing in "Labor" for September 17 with regard to the tentative valuation of the Chicago, Rock Island & Pacific contains such gross misstatements that they cannot go unchallenged. This is not a matter of error in the interpretation of complex analyses but an absolute disregard of facts which may be verified by anyone who has access to the valuation statement made by the Interstate Commerce Commission and the annual report of the Rock Island for 1920. The statement in "Labor" is as follows:

"Interstate Commerce Commission engineers have completed their evaluation of the Rock Island Railroad and find, even under the preposterous methods employed by the commission to determine value, that there is no property back of \$216,492,826 of the road's outstanding obligations.

"To replace the Rock Island new, at inflated after-the-war prices, would cost, according to a report just published, a cost of \$322,277,596.

"There is outstanding capital stock with a face value of \$397,637,422, in addition to which the road holds \$68,758,315 not yet in the hands of the public. The funded debt in the hands of the public amounts to \$231,633,000. The road owes the Federal government \$17,429,000 for various loans which are secured by a portion of its unauthorized stock.

"The valuation figure placed by the Interstate Commerce Commission is to be used for rate-making purposes. It covers all stock outstanding, which means that the public will be required to pay a return on the quarter of a billion dollars of water ploughed into the carrier."

The process of logic pursued in the first and last paragraphs is both novel and ingenious. The first paragraph states that the outstanding securities of the Rock Island are \$216,000,000 in excess of the valuation. In the last paragraph we find that "the valuation covers all stock outstanding." How can the valuation both exclude and include the alleged water? The second paragraph, however, must be given the palm for plain and fancy prevarication. It characterizes the commission's "final value" as the cost "to replace . . . new at inflated, after-the-war prices." In the first place the commission has not seen fit to throw any light on the process by which the "final value" was ascertained other than to say that it was obtained "after careful consideration of all the facts herein contained, including the excess cost of the carrier lands, appreciation, depreciation, going concern value, working capital, including material and supplies, and all other matters which appear to have a bearing upon the values here reported."

In view of this no one has a right to say that the "final value" as given is a "cost to replace." Furthermore, in view of the fact the data at the disposal of the commission included "cost less depreciation," it is a wide guess to presume that the final value was the value of a "new" property. But the prize lie is the "after-the-war prices," in the face of the commission's statement that the valuation is "as of valuation date of June 30, 1915." The prices used were 1914 prices.

The third paragraph attempts a statement of the outstanding securities, but leads the author into such deep water that

he had to beat a retreat without getting very far. What are the facts? How does the valuation compare with the outstanding securities of the road at the present time?

The final value of the Chicago, Rock Island & Pacific, plus that of the Chicago, Rock Island & Gulf, and a minor subsidiary, total \$335,639,013. Adding to this the expenditure for additions and betterments from the valuation date to December 31, 1920, or \$34,715,482, we get a grand total of \$370,354,595 as the total valuation to date. This is to be compared with the capital liabilities as of December 31, 1920, which total \$359,329,782. This statement will be made more clear by a study of the summary below.

FINAL TENTATIVE VALUATION

Final Value C. R. I. & P.	\$322,277,596
Final Value C. R. I. & G.	13,312,667
Morris Terminal	48,750
Total I. C. C. Valuation as of June 30, 1915.	\$335,639,013
Additions and Betterments June 30, 1915, to December 31, 1920	34,715,482

Valuation for Rate Making Purposes December 31, 1920. \$370,354,595

CAPITAL LIABILITIES ON DECEMBER 31, 1920

Capital stock outstanding	\$129,040,511.50
Funded debt	229,975,796.51
Debt to affiliated companies	313,564.09

Total capital liabilities December 31, 1920. \$359,329,872.10

Comparing the final valuation for rate making purposes with the total capital liabilities, we find a difference of \$11,024,723 in favor of the valuation. This sum is subject to more or less adjustment as a consequence of pending settlements with the United States government, but there is every reason to believe that the ultimate difference would be small. The important fact to remember is that the valuation which the commission has given to the Rock Island exceeds its present capital liabilities.

The big question which arises in the minds of the readers concerns the motive back of the gross misrepresentation of the Rock Island's valuation which "Labor" disseminates among railway employees. The answer is that it comprises but a single detail of a deep-seated plot to discredit the railroads in the eyes of their employees. More specifically in this case, the object is to enlist the employees in a campaign for lower rates. But lower rates means decreased earnings for the railroads which in turn mean smaller expenditures for operation and that spells lower wages or fewer employees or both. If there is anything that will militate against the interests of all the employees it is lower rates. But this is no concern of the wrecking crew responsible for the propaganda dispensed in the pages of "Labor," for they would not only sacrifice the railway employees, but the railway stockholders, the shippers, in fact the very business life of the country, on the altar which they have erected to the Plumb Plan.

Colorado & Southern

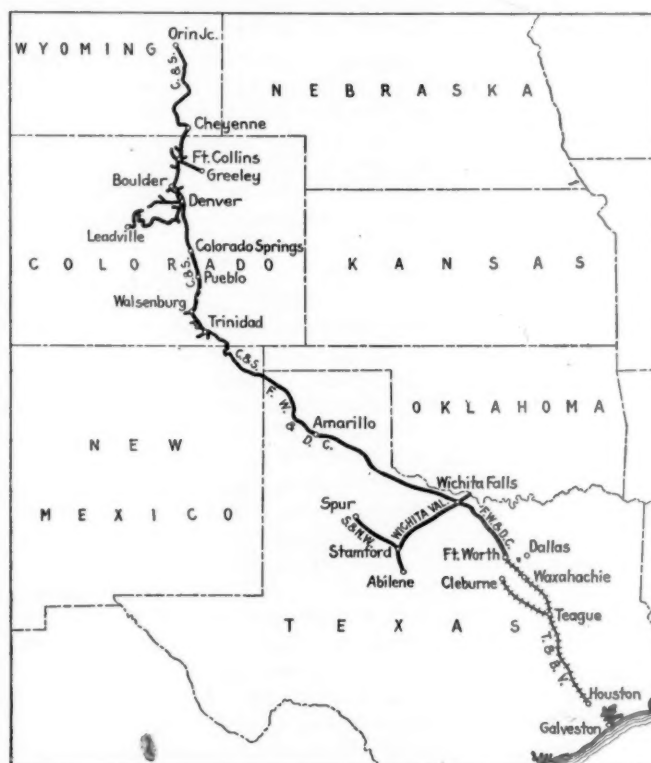
THE COLORADO & SOUTHERN, like various of its sister roads in the southwest, experienced in 1920 a rather satisfactory year. Further than that, it fared rather better than the other Hill roads. The company's corporate income account, in which consideration is given to the standard return for federal operation in January and February and to the amount accrued for the guaranty period, March 1 to August 31, showed for 1920 a net income available for dividends of \$2,606,066 as compared with \$1,783,946 in 1919 or \$1,376,371 in 1918. Dividends paid in each of these years totaled \$680,000, this including payments of 4 per cent on the first and second preferred stocks. No dividends are paid on the common stock. In 1920, the balance after the payment of the dividends on the preferred stock was \$1,926,066.

The net railway operating income of the Colorado & Southern in 1920 showed an increase over the previous year similar to that shown by the corporate net income. The figure

for the year was \$2,771,383. This compared with \$1,588,473 earned for the government in 1919. The standard return for the property while it was under federal control was \$2,481,212. In 1918, the first year of government operation, the net which the Colorado & Southern earned for the Railroad Administration was some \$300,000 in excess of the government rental.

The Colorado & Southern, thus far in 1921, to bring the figures up to date, has been carrying slightly less traffic than it was carrying in the early part of last year. In June this year, the falling off in business was especially noticeable. The net railway operating income for the first seven months of 1921, however, totaled, despite a poor showing for June and only a fair showing in July, \$832,741, which is an improvement when compared with \$838,191 in the first seven months of 1920.

The Colorado & Southern is tied into the Hill system



The Colorado & Southern Lines

through its control by the Burlington, which owns some \$1,130,000 of its \$8,500,000 first preferred, \$6,078,700 of its \$8,500,000 second preferred and \$23,667,500 of the \$31,000,000 common stock. The Colorado & Southern system totals 1,809 miles of line, of which 1,099 are operated by the Colorado & Southern itself; 454 by the Fort Worth & Denver City, and 256 by the Wichita Valley. The figures which have been given above are those for the Colorado & Southern itself. The lines operated by this group of carriers extend from a connection with the Burlington at Orin Junction, Wyo., southward across Colorado through Denver, Pueblo, Trinidad, etc., with branches to Leadville, Greeley, etc., thence across the Texas panhandle and to Fort Worth. Operation over the Trinity & Brazos Valley gives the system access to the increasingly important jobbing center and port of Houston, Tex.

The system's traffic is predominantly products of mines. In 1920 of the total of 6,789,747 tons of revenue freight carried on the Colorado & Southern, 4,689,543 tons or 69.06 per cent were products of mines, of which 3,768,487 tons, or 55.50 per cent of the road's total tonnage, was bituminous

coal. Products of agriculture made up but 11.35 per cent; refined petroleum and its products but 2.51 per cent. The Fort Worth & Denver City carried in 1920 a total of 3,441,773 tons of revenue freight, of which 21.78 per cent was bituminous coal or 35.41 per cent products of mines. The Fort Worth & Denver City had also a large proportion of products of agriculture—25.17 per cent—and refined petroleum and its products made up 13.40 per cent. The Wichita Valley's freight traffic totaled 472,020 tons, of which tonnage 23.09 per cent was products of mines, 36.40 per cent products of agriculture and 14.39 per cent petroleum and its products.

The total tonnage of revenue freight carried by the Colorado & Southern in 1920, as above noted, 6,789,747 tons, compared with 5,697,261 tons in 1919. The revenue ton-mileage in 1920 was 882,016,336 as against 805,616,645 in 1919. The average haul in 1920 was 129.90 miles; in 1919, 141.40 miles. The freight revenues in 1920 totaled \$11,986,502; the total operating revenues to \$16,271,658. The latter figure represented an increase of \$3,295,014 over 1919. The Colorado & Southern was unusual in that its operating revenues increased in greater amount in 1920 as compared with 1919 than its operating expenses. The operating expenses in 1920 were \$12,773,845, an increase of \$2,062,328. The net operating revenue of \$3,497,813 was an increase of \$1,232,686 over 1919.

The operating ratio in 1920 was 78.50; in 1919, 82.54 per cent.

The Colorado & Southern has been making a special effort to encourage agriculture in its territory. In 1920 its agricultural department operated two demonstration cars and a better-farming exhibit car. It has also issued bulletins on various agricultural subjects, has arranged to have addresses at various farmers' meetings, has assisted farmers in ordering feed, seed and stock, and has helped to organize farmers' co-operative shipping and marketing associations. The effect of these various efforts are shown by a rapid increase, particularly in dairy production. In 1917, the system handled 1,932,526 tons of agricultural, live stock, forest and farm implement products; in 1919, 2,512,505 tons, an increase of 30 per cent. The number of carloads of live stock handled into the Denver Union Stock Yards by the Colorado & Southern in 1910 was 3,953 cars; in 1920, 10,046 cars, an increase of 154 per cent.

The operating results in 1920 as compared with 1919 are as follows:

	1920	1919
Mileage operated	1,099	1,100
Freight revenue	\$11,986,502	\$9,701,857
Passenger revenue	3,028,085	2,510,935
Total operating revenue	16,271,658	12,976,644
Maintenance of way expenses	2,626,425	2,092,587
Maintenance of equipment	3,477,596	3,108,389
Traffic expenses	146,120	104,019
Transportation expenses	5,789,036	4,855,575
General expenses	609,555	462,155
Total operating expenses	12,773,845	10,711,517
Net operating revenue	3,497,813	2,265,127
Railway tax accruals	886,205	567,628
Railway operating income	2,607,492	1,692,906
Net railway operating income	2,771,382	1,588,473

The corporate income account is as follows:

Standard return (January and February, 1920; full year 1919)	413,535	2,481,212
Estimated amount due for guaranty period, March 1 to August 31	959,688	.....
Railway operating income and standard return	2,099,993	2,430,960
Dividends and miscellaneous interest	1,352,530	1,430,821
Total non-operating income	2,998,552	1,775,727
Gross income	5,098,544	4,206,687
Interest on funded debt	2,140,438	2,105,095
Total deductions from gross income	2,492,478	2,422,740
Net income	2,606,066	1,783,946
Dividends	680,000	680,000
Income balance	1,926,066	1,103,946

New Books

Index-Digest of Decision of United States Railroad Labor Board. Compiled by Bureau of Information of the South-eastern Railways. Published by Railway Accounting Officers Association, 1116 Woodward Building, Washington. 88 pages; 6 in. by 9 in.; bound in paper.

This book, as its title indicates, is a digest of the decisions of the United States Railroad Labor Board. It includes the decisions up to September 1, 1921—Nos. 1 to 222. The subject matter is arranged in alphabetical or indexed order, whence the name index-digest is derived. The publication gives all that anyone would need to know—for practical purposes—regarding any decision made by the Labor Board. In each case reference is made to the decision in which the finding was given, so that the additional details may be easily obtained where necessary. The use of the index-digest, however, eliminates the time and labor of reading through the full text of the decision. The book does not give rates of wages but the complete references will assist measurably in the finding of the rates relating to the several classes of employment in the decisions themselves. The value of the book is considerably enhanced by elaborate cross indexing.

The publication has been issued by the Railway Accounting Officers Association primarily because of the desirability of placing information of this sort in convenient form in the hands of the accounting officers who must be able to obtain expeditiously and accurately such information in connection with auditing payrolls, etc. It is self-evident that the publication should be of equally great value to executives, operating officers, shop accountants, time keepers, etc., and in general to officers in all departments of railway work. The value of the compilation will further be emphasized when it is realized how much ground has been covered in the many decisions of the Labor Board, and when attention is drawn to the fact that the Labor Board's own digest covers only the decisions up to January 1, 1921, namely, decisions 1 to 41.

The R. A. O. A. contemplates the issuance of future editions at such intervals as may be necessary to provide a reasonably up-to-date index-digest.

The Railway Accounting Officers Association has performed a real service to the entire railway field in taking it upon itself to issue a publication of this kind. The fact that the book issued this week includes the decisions up to as recent a date as September 1 is also noteworthy.

Material Handling Cyclopedia. Edited by Roy V. Wright and John G. Little. Bound in cloth and leather; 850 pages, 1500 illustrations, 1½ in. by 8½ in. Published by the Simmons-Boardman Publishing Company, Woolworth Building, New York City. Price, cloth \$10.00, leather, \$15.00.

This is the latest addition to the library of transportation literature published by the Simmons-Boardman Publishing Company. The volume is a companion book to the Car Builders' Dictionary and Cyclopedia, the Locomotive Dictionary and Cyclopedia, the Shipbuilding Cyclopedia and the Maintenance of Way Cyclopedia.

The purpose of this cyclopedia has been to bring together in a single volume complete, practical working information about the many types of material handling devices used in industry. The purpose has been to make the contents of interest and value alike to the executive interested in reducing handling costs and to the operating man who is seeking information as to the types of material handling machines best suited for his needs, how they operate and where they may be obtained.

The Definition Section in addition to its purpose as a dictionary of material handling terms, methods and devices serves as an index to other sections of the book. Following

the definition of each device receiving further treatment in the book is a reference to the page in the Text Section or Catalog Section on which the additional information appears. Thus, from the definition the reader is referred not only to the detail description, method of operation, and illustration of the device given in the Text Section, but as well to the page in the Catalog Section where the device which he has selected as best suited for his needs is described authoritatively by the manufacturers.

The Illustrated Text Section, which directly follows the Definition Section, has been sub-divided into divisions corresponding to the general classification of machines. Thus the text contains separate sections devoted to Hoisting Machinery; Conveyors; Elevators; Industrial and Motor Trucks, Tractors and Trailers; Industrial Rail Transportation Track, Cars and Locomotives, and Handling Systems. Each section of the editorial portion of the book has been prepared by a specialist particularly fitted for the work undertaken. In this way the experience of eleven specialists in material handling methods and appliances is made available under one cover. Each section is fully illustrated, the illustrations showing typical applications of the various machines as well as their general characteristics and appearances.

A Catalog Section of 150 pages supplements the information shown elsewhere in the book. In it the manufacturers of machines present detail descriptions and illustrations of particular devices referred to in the other sections of the book.

A General Subject Index covering the entire contents of the book is an additional help in making the information readily available.

Saward's Annual Statistical Review of the Coal Trade. 254 pages, including advertising, 6 in. by 8 in. Published by Frederick W. Saward, 15 Park Row, New York.

To men who are connected with the purchase or use of coal, a compilation of data regarding the operation of previous years is of value. This book provides information not otherwise readily available, giving in very complete form statistics of production and shipment with considerable information pertaining to the consumption of fuel. Sufficient comment on conditions in the industry are given to aid in interpreting the figures presented. The situation existing in 1920 is reviewed for the country as a whole and also for the principal producing districts and market centers. Production of both anthracite and bituminous is given for many of the principal companies, as well as for the various fields and for all the states. A large amount of data regarding prices is given, including quotations as early as 1834. The wage rates and the texts of the wage awards for both bituminous and anthracite are quoted. The tonnage shipped over various railroads is given, as well as the amount carried by water, the receipt at the lakes and the amount exported. In addition to the data regarding coal, figures are given for the production and consumption of petroleum.

PASSENGERS TRAVELING BY AIRPLANE are not so numerous as they were, according to a press despatch from Paris. Agents of the lines report a decrease of 50 per cent. The change is attributed to the ZR-2 disaster, several minor accidents in Europe and the smash-up of a Strasbourg-Paris passenger plane recently when all on board were killed. Several planes have been taken off the channel service and only two are now flying between Paris and London. This is said to be the first time that accidents have frightened the public. The airplane concerns are apprehensive and have announced that they will enforce the maximum degree of safety, and they think the lull will only be of brief duration.

Letters to the Editor

Experience Justifies the Universal Use of Non-Signature Train-Orders

SAN FRANCISCO, Calif.

TO THE EDITOR:

Your editorial of September 10, with the letter attached, serves to call to mind the fact that the railroad world is not yet educated up to that condition of mind which would adopt a general agreement on the total abolition of the 31 train-order form. Large bodies move slowly; and, what is more to the point, just here, large numbers of men scattered through 48 States often do not move in unison at all—without much skillful pushing and steering. Form 31 will not stir from its entrenched position. But it does seem as if a somewhat less radical change might be brought about at this time if persistent missionary work and hammering could be kept up by those most vitally interested—the dispatchers and division officers.

Experience during the past 40 years with the 19 form of order on a number of large roads has fully convinced me that while, under certain combinations of circumstances, signatures must be obtained, any operating officer who desires to do so may permit his trains to be handled as outlined below, without fear as to the results:

1. There must be clearance cards delivered with all train-orders, showing the individual number of each order, and these numbers must be checked by the men concerned. Before clearing a train in this manner, the operator must obtain permission from the dispatcher, indicating to the dispatcher by the several order numbers, previously endorsed on the clearance card, on what orders the train is being cleared. The dispatcher must not give O. K. to such clearance until he has checked his own record. If wires fail, the operator may clear trains without the O. K. from the dispatcher, provided all orders affecting the trains to be cleared have been completed by the dispatcher.

2. Three copies of all orders should be delivered to freight trains; one for the engineman, one for the fireman and one for the conductor. Four copies should be delivered to passenger trains; for engineman, for fireman, for conductor and for the flagman. It is unreasonable to assume that firemen and flagmen can always remember the contents of long train orders handed them to read, when the order must be immediately returned to the engineman or conductor. Anyone doubting this statement is invited to try to keep in mind the several "run-late" or 10 or 15 "wait" times to be found in many orders.

3. The 19 order may be used for any movement when the trains affected are moving in the same direction.

4. It may be used to meet trains, provided a copy of the order is sent to the operator at the place of meeting and copies are sent to all trains concerned before their arrival at the meeting point, with this exception: this cannot be regarded as safe practice if (a) the superior train is directed to take siding, or (b) if it must pass the switch where the inferior train takes siding before it reaches the telegraph office where the "middle order" is to be delivered.

I have made several hundred thousand such meets and have yet to hear of a collision or any accident thereunder which could be charged to the use of the 19 order in thus fixing meeting points.

5. In time doubtless it will be universally conceded that the unsigned form of order may be safely depended on except in such cases as taking away from a crew an order which

the dispatcher must know is surrendered; or securing signatures at blind sidings; or when the order-signal will not hold a train at an open office.

Only one form of train order is needed; when necessary to secure signatures, they may be endorsed on this form. A code signal may be used to indicate when signatures must be obtained.

When only one order is awaiting a train at a station, and it is known that the order-signal is displayed at stop for such order, it is an up-hill argument to contend that a 31 would be safer than a 19, as in either case a collision might result if there should be a failure in delivery and the operator is as likely to overlook the 31 as the 19. The 31 in no way adds to the safety of such handling.

I have known more accidents under the use of 31 orders than would have occurred had the 19 form been used. The explanation is quite simple: The 19 is hung up where the operator can see it; the 31 is left lying on his table (possibly covered by other orders or a paper) until it is signed by the conductor.

When signatures must be obtained, why cannot the engineer first sign the order and obtain complete, and then move his train forward until the caboose is near the office so that the conductor may also sign? This would save the delay incident to the conductor having to walk 85 car lengths.

The most ridiculous feature of the present practice is the almost universal custom of delivering to a train one or more 31 orders affecting its rights at a point some 50 or 75 miles distant, without using the middle order at such point. Or, perhaps, it may be a non-telegraph station; or an office which is closed. Doing this while hugging to ourselves the delusion that this is safe train dispatching, because we have the signature of the conductor of the restricted train, is an example of narrow minded short sightedness well worthy of study. Some do this with a virtuous attitude of conservatism and yet forbid, or frown upon, the use of the 19 form addressed to the operator at the place of meeting and to all trains affected within a reasonable distance from such meeting point. So many things occur to distract conductors and engineers; and so frequent are serious delays which cause the lapse of from four to six hours from the time the order is delivered until it must be called to mind and executed, that it is surprising that more collisions do not occur when trains are dispatched in this manner.

H. W. FORMAN.

Ford and the Mechanical Department

LOS ANGELES, Calif.

TO THE EDITOR:

I hold no brief for Henry Ford, but in his efforts to revamp the Detroit, Toledo & Ironton into a successful railroad, he has the sympathy of the public at large. However much we may criticize his six dollar minimum wage day, his wholesale reduction in freight rates, and his Sunday day of rest, those of us who are technical people are watching with keen interest every move he makes in mechanical matters.

It is said that Mr. Ford observed a freight train delayed with a hot car journal. Personal investigation disclosed the crew going through the usual performance of carrying water and robbing crank pin grease from the locomotive. And it is said Mr. Ford made some remark about axles being as "big around as your head." Truly the waste-packed journal box is an heirloom that has promoted more train delays than, I dare say, all other causes combined. There is no reason why a journal could not be designed to run several years without attention of any kind, or at least until wheel tread or flanges demand attention. European experiments have demonstrated that roller bearings are not impracticable. But for the high journal pressures employed in America, a long slender bearing with loose lubricating rings, such as is common on

dynamos, might be equally effective. With a substantial and tight housing, a journal might be depended upon to run years without repair.

No one is satisfied that car construction is perfect. With massive complex steel castings and electric welding developed as they are, there is no reason why the sills, bolsters, frames and purlines could not be fabricated into one piece. This piece could be standardized. Instead of the thousands of different designs scattered over the land, there might be three or four accepted designs, each interchangeable with its own kind. Further increase in car capacity is improbable. The average merchant finds 50 tons is an economical unit to purchase and transport. Larger capacity cars would involve more l.c.l. shipping and increased difficulty in stowage. It is reasonable, then, to suppose that the modern car is adequate in size and capacity for many years to come. The problem is to design the lightest and most efficient structure that will handle the standard load. If Mr. Ford's engineering department devotes as much energy to devising a feather-weight freight car, as to creating his little automobile, even the most cautious among us will venture that the new car will revolutionize railroading.

The steam locomotive has been in a constant stage of development, but the final limiting weight appears to be 200 or 250 tons. Mr. Ford proposes to build a 75-ton locomotive equally powerful. With the coefficient of adhesion between drivers and rails approximately $4\frac{1}{2}$, the only way the proposed locomotive could develop adequate tractive power is by employing the adhesive weight of engine truck and trailer wheels, and, perhaps, the temporary use of magnetic pull on rail to hold the wheels down when starting. With the train under way the problem is simply to develop the existing machine into one having sustaining power to handle a capacity-train long distances.

Mr. Ford's experience with pulverized fuel in his manufacturing plant may recommend a similar system for locomotives. The boiler would be redesigned to suit the fuel, and in place of the standard small firebox, there might be a larger one with unusually long combustion chamber, or corrugated or water tube arrangement. Steam pressures of 300 lb. or 400 lb. condenser and forced draft would not be scoffed at. The general use of heat-treated steel and "I" sections instead of rectangular shapes would reduce the dynamic augment, and permit doubling the static wheel load on the rail. Grease lubrication, with its tremendous internal friction, might give place to automatic oil lubrication for all driving journals. Instead of crown brasses, there might be main bearings completely surrounding the main axle so as to withstand the thrust of the rods.

Considering the present development of worm drives, which survive most exacting service in automobile trucks, a similar system might be incorporated in the new locomotive. The development and perfection of a 75-ton locomotive that will equal the 250-ton machine is a feat worthy of the best engineering talent the country affords. In our locomotive works and railroad offices much detail design is entrusted to poorly paid draftsmen, and the botches they perpetrate survive for generations. Every part, no matter how trivial, should receive the best technical attention. Mr. Ford has drawn into his automobile organization engineering talent of the first order. With these men turned loose on a standard locomotive, no one doubts the result.

Dare we hope that Mr. Ford will undertake a saving of the entire mechanical situation? The present equipment is fundamentally the same as it was 50 or 75 years ago, and aside from increasing the thickness of sections, enlarging the parts, and hanging on appurtenances such as power reverse gears, feed water heaters, and boosters, there has been no great outstanding radical improvement. In other words, there has been a glaring lack of originality. Designers for the most part have resembled weather vanes and never dared

head across the wind. What is needed is a vigorous and prompt return to the fundamental problem, namely, to design the most powerful and efficient machine consistent with existing track and clearances.

Let the designer assume that no previous equipment is in existence whence to borrow ideas. Let him build from the ground up utilizing what we know today regarding kinematics and thermo-dynamics. Radicalism should be encouraged. Considering the present state of science, is steam the best available working medium? And is the reciprocating engine the best agency for utilizing it? One of the painful things about the proceedings of many of our engineering societies is the caution with which each new idea is advanced, and the criticism and storm of protest or skepticism manifest from all sides. Many nebulous ideas have been consigned to the waste basket for fear of scorn. There has been too much standing aside waiting for illumination from the few acknowledged leaders of the profession. Meanwhile the efficiency of conversion of heat content of fuel into useful work remains seven per cent. Perhaps Mr. Ford will raise it.

STOCKHOLDER.

The Official Goats

SOMEWHERE-ON-THE-ROAD.

TO THE EDITOR:

In all the eddying whirlpool of railroad labor trouble, there remains but one quiet spot—the secretaries. All other employees have been recognized as having a place under the sun; even the chief clerks are gaining some much deserved recognition. But not so the secretary. He still remains the official goat. He is kicked at so much that he is sick of kicking and does not kick.

Nine years ago, as a plain stenographer, I looked with envious eyes at the secretary, thinking only of the pleasures of riding around in the official car, seeing the sights and having a good time generally, but I failed to notice the worried, harassed look that seems characteristic of all secretaries. Yes, the job seemed attractive enough to me nine years ago, but looking back now in the light of those nine years' experience as a secretary, I find that the glamor has faded. Nine years of acting as a buffer between the boss and the world! Nine years of taking the blame for everything that happened on the railroad!

Sometimes I wonder how I have retained even those shreds of self-respect that are left to me, after acting as a safety valve for the temper and sullenness of the three officers I have worked for in that period. And yet these three officers were not martinets. All of them were pretty good fellows, but there wasn't one of them who didn't jump on the secretary whenever anything went wrong. Of course, it is only human to vent one's rage on the object closest at hand, but I want to say, after nine years of taking it, that it is mighty unfair to the secretary.

It may seem far-fetched, but it has been my observation that there are very, very few railroad officials in this country who treat their secretaries as white men. I can hear the angry protests of every railroad official in the country, but ask the secretaries and you will find that they are unanimous in agreeing that they are needlessly bullied and blamed for all sorts of things over which they have not the slightest control nor any connection whatever. After all, the secretary is human, even if it is the fashion for his boss to consider him as a soulless target to hurl cuss words at.

Any secretary who reads this will readily recognize the following as a typical day's bawling out. The boss gets up and comes to the breakfast table. He is feeling rotten. He has eaten too much the day before or he has not eaten enough, or just naturally feels mean. His eyes roam about restlessly; the secretary recognizes the look and sighs, for

he knows what that means. The boss is looking for something to fuss about. Presently the boss almost smiles, for he has found something about which he can ride the secretary and feels better.

"Where's my morning reports?"

Now, everybody on the railroad knows the GM wants his morning reports the first thing in the morning and they all try to get them to him. The secretary rolls out first thing in the morning, rushes madly to the telegraph office to get them, but they are not there. Sometimes somebody does slip up, and the wires are down or the operators are asleep on the job, but does the GM blame the telegraph department or whoever else may be at fault? Not a bit of it. By the time he sees the superintendent of telegraph he will have forgotten about it; but he is mad now, the secretary is right at hand so the goat sits at the breakfast table and listens to a long harangue.

Having thus started the day right, the GM, or any of the other officials for that matter, continues throughout the day, about as follows:

"Don't see why you don't have the cook get better ham. This is like shoe leather. What's the matter with the coffee this morning? Why does it always rain in this town? Did you tell Smith to meet me with his auto at nine? What's the matter with the mail? Maybe if you would look for it instead of sitting there like a bump on a log, you would find it. Why didn't you have the car put in a quieter place? Why is that guy switching us around just when we are eating? Wish you wouldn't throw ashes all over the floor. Why don't you eat cabbage? Have you got those letters ready yet? Takes you all day to do anything. Why did this fool write me this letter? What's he talking about anyhow? Have you got the file on the car? I told you I wanted that file. No, you can't go uptown tonight. I want to write some mail. Wait up for me."

All this monologue was liberally interlarded with cuss words, of course. It is an exact verbatim transcription of what the GM said, for I took it down for that special purpose. To read it over one would think that I was the worst secretary in the business, yet I have been with the GM nearly four years. But it isn't that I am not giving satisfaction. At least, I get by all right, but it's always open season for swearing at secretaries. It's so nice to have somebody around to relieve one's rage upon, but I can say from bitter experience that it's not so nice for the "relievee."

The injustice of it is that those very secretaries who are treated in this fashion are usually bright, ambitious young chaps or they wouldn't be picked to go on the road. To them is intrusted every sort of responsibility, personal and private. For pitifully small wage, these boys work day and night (for the secretary knows no hours). They keep the bosses' correspondence secret and inviolate. They leave home on a moment's notice ready for a long trip. They deal with everybody on the railroad, act as grand vizier for the boss, alternating as his adviser, valet, physician and target for his abuse. They take the bosses' unjust criticisms philosophically.

And why do they put up with all this? Because they are loyal. They belong to no union; the eight-hour day is a myth so far as they are concerned, but they stick to their guns amid volleys of needless abuse and lack of appreciation because they love the rolling road; the roar of the Mountain type through the cañons and the softer purr of the Pacific type across the plains is music to their ears. The railroad is in their blood.

They make no demands; they ask for nothing. Shorter hours and more pay are agreeable words, but they are merely empty words for the secretary for he knows that his loyalty will be rewarded by a total lack of consideration on the part of the management. He knows that when increases are being passed out he will be the last one considered, if he is considered at all, and he knows that when cuts are in

order his name will head the list, but he takes it all without resentment, much as one overlooks the faults of an unjust parent whom one loves nevertheless; but he would like to be treated as a human being.

All he asks is that you officials who have secretaries realize that the average secretary has sensibilities and that his intelligence is sufficient to perceive lack of appreciation for work well done. In short, stop venting your own general cantankerousness on the secretary.

Above all, keep this thought in mind—your secretary is human, he is faithful and loyal and merits decent treatment. Did you ever try being human to your secretary? Try it some time and see how he brightens and expands under such treatment. If you do, you will be in the class with some of the brightest officials in the country (unfortunately few) who do not consider their secretaries as the "Official Goats."

ONE OF THEM.

Reducing Road Freight Overtime

Owosso, Mich.

TO THE EDITOR:

I believe that it is now important to consider the question of road freight overtime for train and engine crews. With this thought in mind I will describe the method of dealing with this on the Ann Arbor railroad and the results obtained. I also feel that the time is proper to show what is being done towards economical operation in view of recent statements made before the Labor Board at Chicago pertaining to the waste and particularly that waste which can be found by examining the train sheets of the different railroads. When overtime is reduced to a minimum the greatest waste that can possibly be found from checking train sheets has been eliminated.

Overtime on the Ann Arbor railroad is watched probably more closely than any other individual item of expense. This intensified supervision in itself increases the miles per hour of all locomotives, increases the miles per day of all cars, decreases the per diem expense, adds more locomotives without increasing the units, avoids yard congestion, improves the handling of the freight over the railroad as a whole, and means a corresponding saving in coal, oil and other supplies, based on the percentage of reduction. In reducing the overtime there has been no sacrifice in the line of service or lowering of tonnage rating in order to accomplish the result. Whatever reduction has been made has been made through the education or the solicitation of the co-operation of each employee connected with the handling of trains, from the call boy to the train dispatcher. The result has been that there are any number of these men on the Ann Arbor railroad, who feel just as bad about making overtime on a trip as do the officers.

The plan of education has been along the lines of a daily check of the performance of each train operated. This check is made from both the delay report furnished by the conductor and the train sheet. Any delay, which on the face of it appears excessive or unnecessary, is taken up. If it appears that an engineer has made an unnecessary water stop, was too long taking coal and water, consumed too much time in dumping ashpan at different points where this is considered necessary, failed to make the average run between given points taking into consideration the tonnage on the train, weather conditions, etc., such delays are referred to the road foreman of engines to handle with the engineer, with a view of reducing all necessary delays to a minimum and entirely eliminating all unnecessary delays.

Where conductors put in too much time picking up or doing other work, fail to properly inspect train which later results in a delay, etc., these matters are taken up with them by the trainmasters. Delays which seem excessive, due to the

train dispatchers, are handled with them through the chief dispatcher. Delays caused by any mechanical defect are referred to the mechanical department. Delays caused by the roadway department employees, such as section men taking out rails without getting a line-up on trains, etc., are referred to the head of the roadway department. The manner in which the men as a whole have co-operated is surprising and the general chairmen of the four brotherhoods of train service employees have rendered every possible aid in bringing about the results for which we have been striving.

On the part of the management, sufficient supervisory force has been furnished so that the trainmasters, road foreman of engines and traveling fireman can spend the greater portion of their time on the road, riding freight trains and keeping in close personal touch with all the employees, for without keeping in close personal touch with your employees, you cannot hope to obtain results. Another feature which has brought about a great saving in overtime is the use of the 19 order for restricting the superiority of trains, which has been in successful operation for upwards of a year; and all of the train service employees, as well as the other employees on the road, endorse its use.

Due consideration is given to the starting of trains to avoid congestion, meeting points at short sidings, and trains are never run so close together that the trains in the same direction interfere with the movement of one another. In other words, trains are never run in fleets, which can be done on a small road as well as a larger road because there are always conditions which necessarily cause one to have several engines at one terminal.

As a result of the above mentioned efforts, the low record for the amount of total overtime on the Ann Arbor railroad was made on March 10. This road is 292 miles long. There were operated on this date 15 freight crews, handling a total of 403 loads and 155 empties. These 15 crews made a total overtime of 1 hr. and 46 min. Over 166 miles of the railroad, where the majority of the freight trains are operated, there are four first-class trains in each direction every 24 hours; on 62 miles there are three first-class trains in each direction, and on the remaining 64 miles there is one first-class train in each direction. The percentage of overtime loads and 192 empties per day, with an average of 13.2 crews to total time for these 15 crews March 10 was 1.4; this percentage having been cut down from 25 per cent. For the first 15 days in March we have handled an average of 441 per day and a percentage of overtime to total time of 8.3.

V. PARVIN,
Division Superintendent.

Permanent Remedy for Railway Labor Troubles

NEW YORK.

TO THE EDITOR:

The foregoing is one of the optimistic subheads in the very ingenious and suggestive article on the great country-wide railroad problem, from the pen of F. J. Lisman, which was published in your paper on July 9. And Mr. Lisman hits the bullseye with unerring aim; the labor leaders will object to his plan most strenuously, but a majority of their constituents would favor it, freely, if they could have a chance to vote on it. Nobody can tell how soon the world is going to see the genius who can convert these labor chiefs into broad-minded public-spirited leaders, or when the rank and file of railroad employees will rouse themselves to the extent of becoming free and courageous citizens; strong men with the courage to vote as their own mature judgment dictates; but it will be useful right now, regardless of how long our hopes may be deferred, to think over some of Mr. Lisman's proposals. I wish to suggest one point. It is in con-

nection with his proposed article Number 1, under which the government would lay down rules for the election of officers of the labor unions.

This is a vital feature. The selfishness and short-sightedness of the leaders is the real cause of most of the labor unions' mistakes and misfortunes. After 40 years, the railroad employees of the country are still without any satisfactory means of picking out their wisest men for leaders. Here, as in municipal politics, self-seeking busy-bodies get into office while conservative and honorable men carelessly remain asleep. It will be a great thing if the government can lay down election rules which shall tend to repress the selfish and encourage the right-minded.

And for the substance of a rule for selection of leaders we have instructive examples all around us. How is a suitable judge found for one of our high courts? By seeking a lawyer of good *character* and *experience*. Those two words mean that the man has been well known to his fellow citizens for a number of years. Usually they mean, also, that he is favorably known. Why should any conservative engineman, conductor or mechanic vote for any man for leader without first having such a guarantee of his honesty and efficiency? Never vote for a man for chairman of your local committee unless you know that, *for a period of years*, he has been trustworthy, broad-minded and human. Is there anything unreasonable or impracticable in such a requirement? By putting their best men, best-known men, long-trying men, in places of leadership, the employees' brotherhoods would only be following the example of all associations of wise and level-headed men everywhere. Today, as Mr. Lisman observes, the best men in these brotherhoods allow themselves to be led around by the nose on the order of a few young hot-heads.

And it would do no harm if there were a property requirement; if a candidate for leader should be required to have some financial interest. Such a requirement might not mean a great deal at first, but the principle would be educative. A citizen cannot go into court and take up the time of the judge and the court officers with a doubtful lawsuit without giving bonds to cover the costs; but railroad grievance committees can keep up costly conferences for weeks at a time with no limit on the expense except the railroads' easygoing generosity. Something ought to be done to make such committees realize their responsibility. Much has been said about capital's unfairness to labor; but one of the outstanding examples of unfairness in the railroad world is the liberality of the officers in allowing committees to grieve by the month at the company's expense. Such practice is unfair to the stockholders and to the great mass of employees who are not constantly grieving.

B. R. B.

Some Fundamentals of

Labor Unionism

NEW YORK.

TO THE EDITOR:

Many railroad officers in this country are Christian gentlemen; but there is one prominent Christian principle which they seem with fatal persistence to neglect. It is found in the Bible—the book of Christian principles—Epistle of St. Paul to the Christians at Rome, 12th Chapter, last verse; “Overcome evil with good.”

Why do we not apply this to our ever present labor-union problem? The way to kill off a pernicious union is to form a rival union which shall be so much of an improvement that men of reasonable motives and purposes will change their allegiance. This principle is recognized by wise men in other walks of life. To kill weeds and then neglect to plant good seed in the ground to take their place is the height of fatuity. What politician would be so foolish as to denounce

the opposite party and yet make no effort to put up, and to praise, a strong candidate on his own side!

The most heartening thing that has occurred in the railroad labor field for many years is the action of the Pennsylvania Railroad in encouraging large numbers of its employees to organize themselves for collective bargaining independently of the “national” and “international” brotherhoods. This can be said without any reflection on the principles of the large brotherhoods, and even without any reflection on their present leaders, for there are two fundamental principles which constantly tend to weaken these large brotherhoods: (1) National leaders cannot deal adequately with local problems. All they can do is to fight forever for uniformity, which means that all railroads must give the highest pay and the easiest conditions that cunning “grand chiefs” (always aiming at one objective) can extort from the easiest mark among the railroad presidents; and (2) these national leaders, even though they were angels from heaven, are under the constant temptation to magnify their own offices; to act from the narrowest selfish and personal motives. They are human, like the rest of us. To really serve the best interests of their constituents they must often take their official lives in their hands; and who has the courage to do that?

Why should not every large road follow the Pennsylvania's example? It is a difficult proposition, I know; but what can be more difficult and discouraging than the present situation?

It will be said that the employer cannot with safety do what the Pennsylvania is doing; that he, like the labor leader, will consider, not the employee's interest, but his own. *But it is this, or nothing!* The great majority of the men classed as “labor” lack wisdom; they must be led by wiser men; men of big brains and consciences. It is the employer's duty—aye, his interest—to provide the needed brains and conscience.

An employer can advise and aid his employees unselfishly; the only question is, are there enough of us actually to do it, and do it with sufficient force and enthusiasm to “start something” all along the line? Small employers have done this; shall we say that the railroads are so big that they are powerless to do it? It would even pay to hire some outside individuals—priests, lawyers, or female welfare workers—to begin some plan for breaking the ice, if there are not enough big Christian men in the railroad world to assume the task.

I have said that “reasonable” employees would be amenable to right teaching or leading. How many of your employees are in that class? This, of course, is the crux of the question. How shall weak-minded or short-sighted men be made thoughtful and far-sighted? Educating men to be reasonable—that is, intelligent, well-informed, considerate of others and truly public spirited—is, however, a highly useful work, whether you ever show any tangible results or not! It is well worth while for “capital” to thus do good work for “labor” whether the reward comes in this life or the next.

Complete publicity is the one essential pre-requisite to any tangible accomplishment in the line that I have suggested. Mistakes will be made, and wrong motives will creep in; much tedious traversing of old ground will be necessary before any progress will be visible; but complete frankness and honesty would be the antidote for all sorts of troubles. Publicity compels honesty!

H. G. W.

WHILE IN COBLENZ I asked one of our American boys stationed there if he was not anxious to get back home. His answer was “No! I don't want to leave here as long as my \$30 a month produces over 2,000 marks on which I can live like a prince.” But this exchange question is a double-edged sword which cuts both ways. While we are busy building our tariff wall higher and higher this premium on our dollar tends to keep our goods out of foreign markets far more effectively than any protective tariff which the other nations might enforce against us.—Journal of the American Bankers' Association.

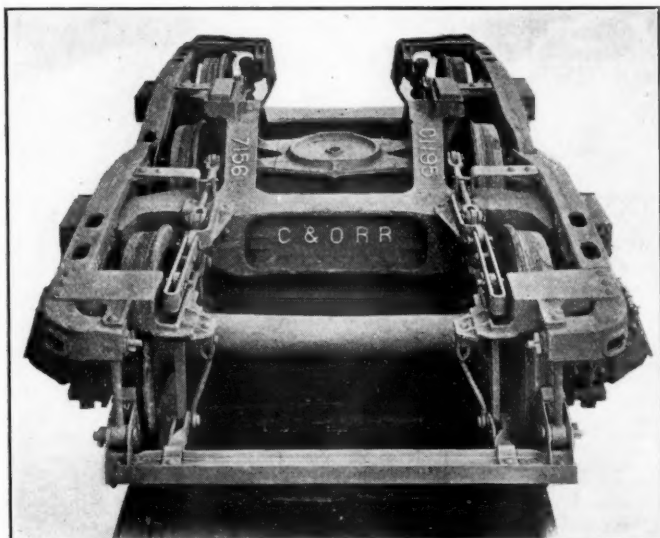


Chesapeake & Ohio Gondola Coal Car of 100 Tons Capacity

100-Ton Coal Cars for the Chesapeake & Ohio

High Capacity Cars Adopted for Handling Export Coal—Drop
Doors Provided for Emergency Unloading

THE CHESAPEAKE & OHIO handles a very large amount of export coal from the West Virginia and eastern Kentucky fields. The total tonnage which this road dumped at Newport News in 1920 was 7,264,000 tons, which was exceeded only by the Norfolk & Western. The pier is



Lewis Truck with Clasp Brake

equipped with a pair of stationary turn-over car dumpers, each of which is capable of handling all sizes of cars up to those of 100 tons capacity at a rate of 30 cars an hour. The coal is dumped from the road cars into special transfer hopper cars which are lifted by an elevator, run along the pier and dumped into pockets. A large part of the export coal has been handled hitherto in hopper bottom cars of 70 tons capacity, but there has been considerable difficulty in

preventing these cars from being loaded for interchange points.

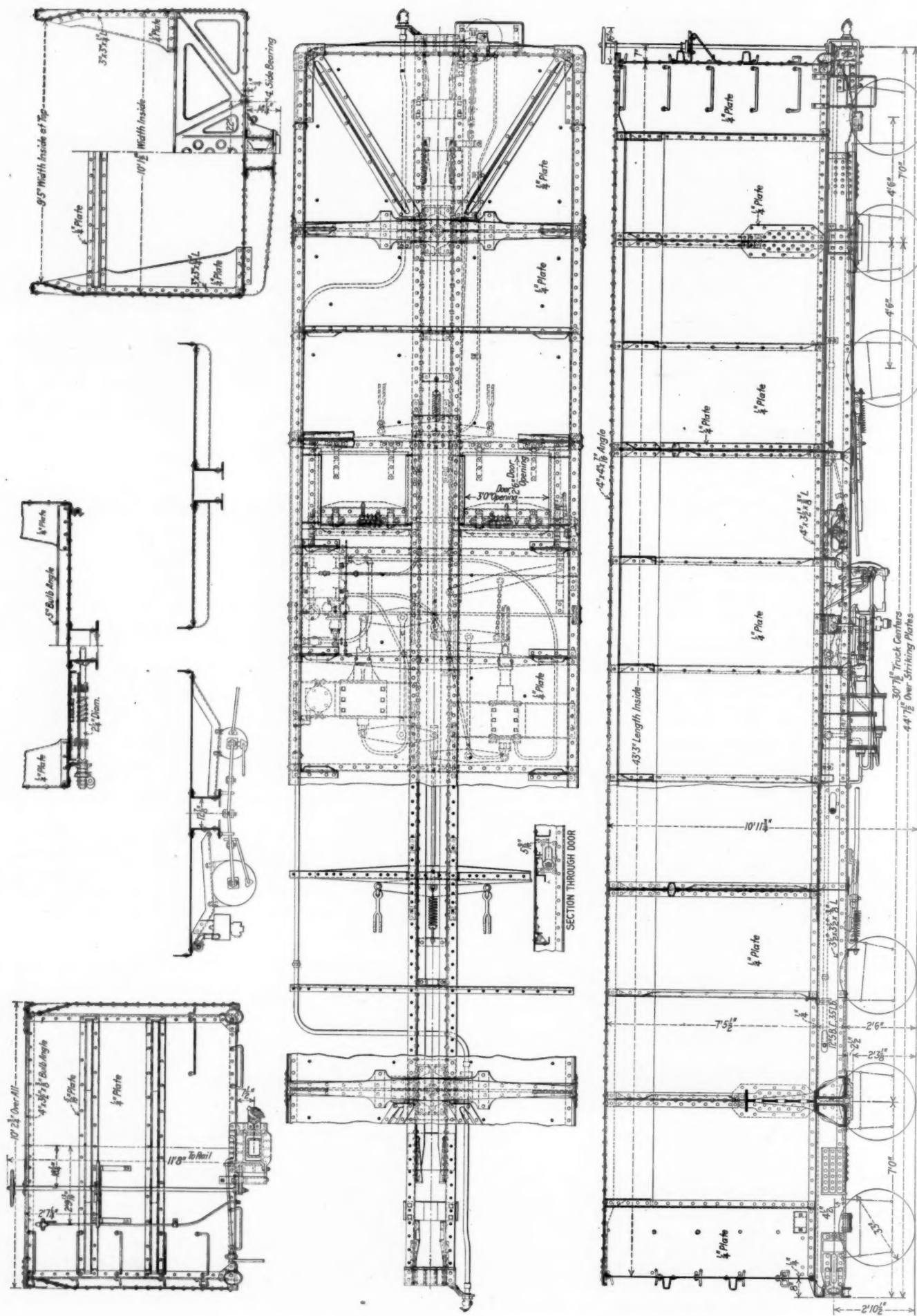
To facilitate the handling of tidewater traffic, the Chesapeake & Ohio last year ordered 1,000 cars of 100 tons capacity, of which 500 were built by the Pressed Steel Car Company and 500 by the Standard Steel Car Company. These cars are of the flat-bottom, high-side, gondola type and ordinarily will be unloaded by car dumpers. They are provided, however, with four drop doors which permit them to be unloaded in case of emergency at points where dumpers are not installed.

Of the three large roads which deliver coal to points on Hampton Roads, the Chesapeake & Ohio and the Norfolk & Western recently have adopted cars of 100 tons capacity, while the Virginian is using cars of 120 tons capacity. Both of these designs have been described in previous issues of the *Railway Age*.

Construction of the New Cars

The inside dimensions of the new 100 ton capacity cars are 43 ft. 3 in. long, 10 ft. 1½ in. wide and 7 ft. 5½ in. deep. This gives a coal space of 3,212 cu. ft. when level full, or 3,703 cu. ft. when heaped at an angle of 30 deg. Using a factor of 54 lb. per cu. ft., the heaped load would weigh 200,000 lb. The cars, however, are stenciled as of 182,000 lb. capacity to provide for a 10 per cent overload. The length over striking castings is 44 ft. 7½ in.; the maximum outside width is 10 ft. 3⅝ in., and the height from top of rail to top of sides is 11 ft. The distance from center to center of the trucks is 30 ft. 7½ in. and the trucks, which are of the Lewis six-wheel type, have a wheelbase of 9 ft. The light weight of the car is 68,300 lb. and the weight on each axle with the car loaded is 44,717 lb.

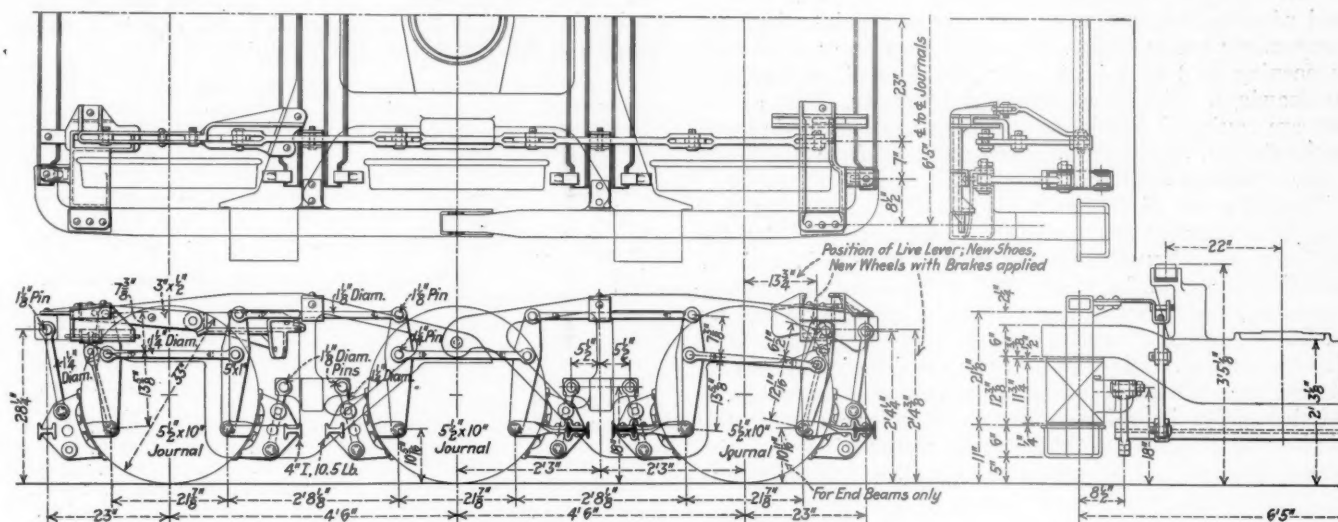
The center sills are made up of two 12-in., 35-lb. channels with flanges facing out and reinforced at the bottom by 3½ in. by 3½ in. by ⅜-in. angles, extending between the draft gears, and at the top by the ¼-in. floor plates. There is



also a reinforcement in the center of the car on top of the floor plates consisting of a $\frac{1}{4}$ in. plate 20 in. wide and extending slightly beyond the door openings.

The body bolsters are of cast steel. They are in one piece, 30 in. deep, located inside of the car body and reaching from side to side of the car on top of the floor. The body center plates are of cast steel, 16 in. in diameter, and have

seven pressed steel braces, as will be noted from the illustration showing the side view of the car. The side sheets are set in at the ends to bring the grab irons inside of the outer face of the side sheets and are flanged over the end sheets. Reinforcing plates are provided at the ends of the body bolsters. The two sides are tied together by two crossbraces, one at each intermediate gusset brace. They are constructed



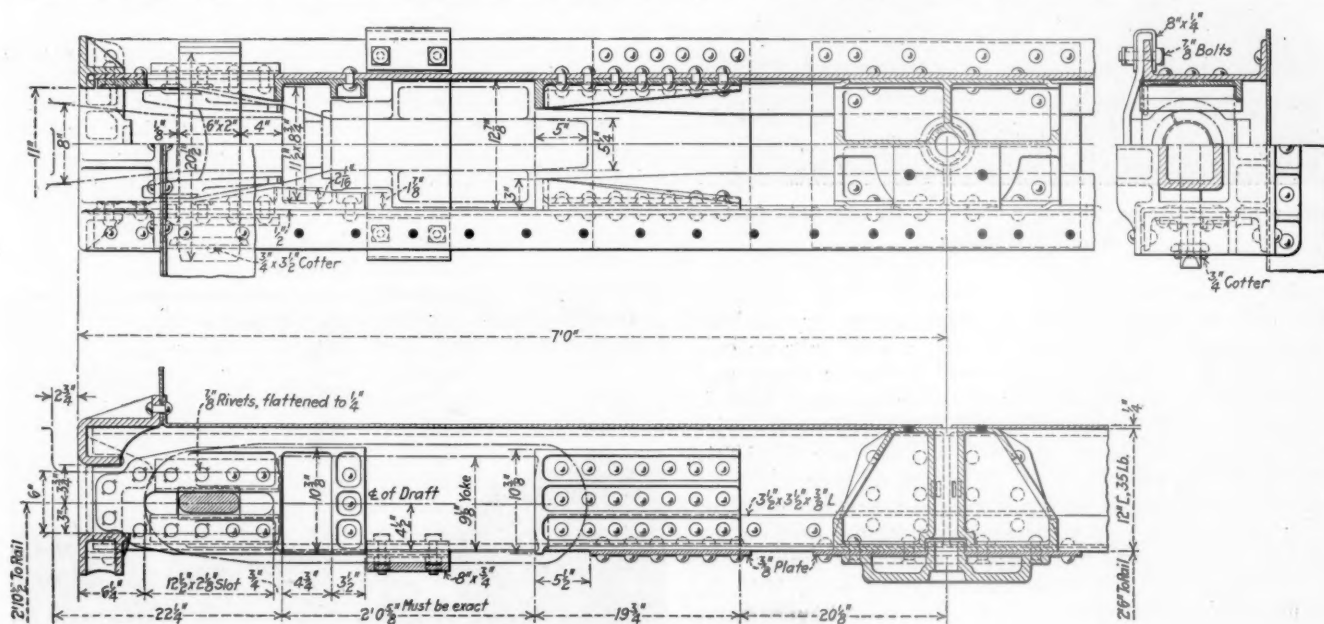
Clasp Brake for Lewis Six-Wheel Truck

machined bearing surfaces. The body bolster center braces are of cast steel machined and the center brace brackets are also of cast steel. The body side bearings are open-hearth steel bars, 4 in. by $\frac{5}{8}$ in. by 16 in., spaced 22 in. from the center of the car to the center of the side bearings, and with a clearance of $\frac{1}{4}$ in. between body and truck side bearings.

The side sheets, placed outside the side stakes as in the

of $\frac{1}{4}$ in. pressed plates, are of box shape and are shown clearly in the illustration of the inside of the car. Such braces were not used on the Norfolk & Western or on the Virginian cars, but should add materially to the stiffness of the sides.

The ends are of $\frac{1}{4}$ in. steel sheets, reinforced at the top by a 4 in. by $3\frac{1}{2}$ in. by $\frac{3}{8}$ in. bulb angle and by two



Draft Gear Arrangement

Virginian 120-ton cars to give the maximum width inside the body, are of $\frac{1}{4}$ in. steel pressed in toward the top and reinforced by a 4 in. by 4 in. by $\frac{7}{16}$ in. angle and at the bottom by a 4 in. by $3\frac{1}{2}$ in. by $\frac{3}{8}$ in. angle. Each side is also reinforced by nine $\frac{1}{4}$ in. pressed steel gusset side stakes located inside of the car. The sides are further stiffened on the outside at the top by four cast steel braces and by

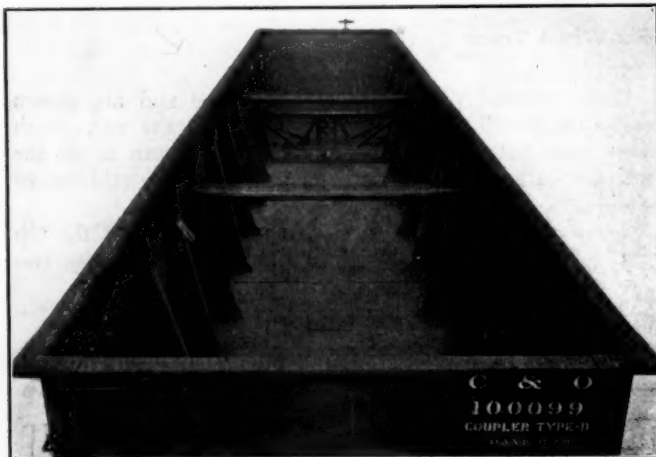
pressed steel U-shaped horizontal stiffeners of $\frac{5}{16}$ in. steel, 5 in. deep at the center.

There are three cross-bearers, one at the center of the car and the others intermediate between the center and body bolsters, consisting of $\frac{1}{4}$ in. pressed steel diaphragms with 8 in. by $\frac{1}{2}$ in. bottom tie plates, four crossies—two of pressed steel next to the center cross-bearers and two of 5 in.,

9.3 lb. bulb angles on top of the floor next to the body bolsters—and a diagonal brace to each corner of $\frac{1}{4}$ in. pressed steel riveted to the top of the floor. The floor is made of $\frac{1}{4}$ in. open-hearth steel sheets.

The large capacity coal cars used on the Norfolk & Western and on the Virginian are not provided with bottom doors, it being assumed that they would always be emptied by car dumpers. The Chesapeake & Ohio cars have flush bottoms but are equipped with emergency drop doors which can be used when necessary to unload the car at a point where car dumpers are not available. The four drop doors, each with an opening of 2 ft. 6 in. by 3 ft., are located as shown on the drawings. They are operated in two sets. Part of the cars are equipped with door operating mechanism designed by the Pressed Steel Car Company and part from the design of the Standard Steel Car Company.

The trucks are of the Lewis, six-wheel type with cast steel side frames and bolsters designed and furnished by the American Steel Foundries. The wheelbase is 9 ft. and the journals are $5\frac{1}{2}$ in. by 10 in., M.C.B. standard dimensions. The wheels are of wrought steel, part of them furnished by the Carnegie Steel Company and part by the Forged Steel Wheel Company. The side bearings consist of pockets cast integral with the truck bolster with cast steel filler blocks and three $3/16$ in. shims in each pocket for adjusting the side bearing clearance to the nominal amount of $\frac{1}{4}$ in. The journal boxes are of pressed steel, Kensington type, manu-



Interior of Car Body, Showing Bolster, Gusset Side Stakes and Crossbraces

factured by the Union Spring & Manufacturing Company.

The cars are equipped with Westinghouse empty and load brakes, schedule KDE-4-10-16, having a 4-in. take-up cylinder, a 10-in. cylinder for use when the car is empty and an additional 16-in. cylinder for use when the car is loaded. The brakes are of the same type as those used on the Virginian as described in the *Railway Age* of June 17, 1921. Retaining valves are of the 10-20 lb. spring type.

The brake rigging is designed to give a braking effort of 40 per cent on the empty car and also 40 per cent on the loaded car. The trucks are equipped with clasp brakes having vertical levers. The brake beams are of 4-in., $10\frac{1}{2}$ -lb. I-beams with two sets of open-hearth forged steel brake beam fulcrums spaced on 3 ft. 10 in. centers and substantial malleable iron brake heads. The hand brake is of the geared and multiplying type. The wheel load is 5,692 lb. on the empty car and 22,358 lb. on the loaded car. The nominal brake shoe pressures are 2,277 lb. on the empty car and 8,943 lb. on the loaded car.

The draft gear is of the Miner A-18-S friction type with $2\frac{3}{4}$ in. clearance between the coupler horn and the striking castings. The cheek castings are of cast steel; each rear

cheek has 27 $\frac{3}{8}$ -in. rivets; the front ones have 15 rivets. The draft sill tie is 8 in. by $\frac{3}{4}$ in. The couplers are A.R.A. type D with 6 in. by 8 in. shanks, connected by keys to cast steel yokes. The striking irons are of cast steel, the coupler carrier iron being cast integral with the striking casting.

In addition to the usual safety devices, the cars are provided with an inside ladder at each end.

The accompanying table gives the principal dimensions and other data of these cars and in addition similar information in regard to the large capacity coal cars used on the Norfolk & Western and on the Virginian.

Railroad	Chesapeake & Ohio	Norfolk & Western	Virginian
Capacity, stencilled..	182,000 lb.	200,000 lb.	218,000 lb.
Capacity, heaped 30 degrees	200,000 lb.	200,000 lb.	240,000 lb.
Cubic capacity level..	3,212 cu. ft.	3,122.5 cu. ft.	3,850 cu. ft.
Cubic capacity, heaped 30 degrees.	3,703 cu. ft.	3,636 cu. ft.	4,450 cu. ft.
Estimated density of load	54 lb. per cu. ft.	55 lb. per cu. ft.	54 lb. per cu. ft.
Length over striking plates	44 ft. $7\frac{1}{2}$ in.	43 ft. 9 in.	50 ft. $8\frac{3}{4}$ in.
Coupled length.....	47 ft. 1 in.	46 ft. 2 in.	53 ft. $3\frac{1}{2}$ in.
Truck centers.....	30 ft. $7\frac{1}{2}$ in.	31 ft. 8 in.	36 ft. $10\frac{3}{4}$ in.
Truck wheelbase....	9 ft. 0 in.	8 ft. 6 in.	8 ft. 8 in.
Height, rail to top of car side.....	11 ft. 0 in.	11 ft. 0 in.	11 ft. 0 in.
Length, inside	43 ft. 3 in.	42 ft. 7 in.	49 ft. 6 in.
Width, inside.....	10 ft. $1\frac{1}{2}$ in.	9 ft. 6 in.	10 ft. $2\frac{3}{4}$ in.
Depth, inside, center.	7 ft. $5\frac{1}{2}$ in.	8 ft. $6\frac{1}{4}$ in.	8 ft. $5\frac{1}{2}$ in.
Depth inside, ends..	7 ft. $5\frac{1}{2}$ in.	7 ft. $5\frac{1}{4}$ in.	7 ft. $4\frac{1}{4}$ in.
Width outside, extreme	10 ft. $3\frac{3}{4}$ in.	10 ft. $1\frac{1}{4}$ in.	10 ft. $3\frac{3}{4}$ in.
Weight of car body..	41,100 lb.	29,020 lb.	43,200 lb.
Weight of two trucks	27,200 lb.	24,480 lb.	35,700 lb.
Weight of empty car.	68,300 lb.	53,500 lb.	78,900 lb.
Weight loaded.....	268,300 lb.	253,500 lb.	318,900 lb.
Per cent revenue load of total weight...	74.6 per cent	78.9 per cent	75.3 per cent
Rail load per axle, loaded car.....	44,717 lb.	42,250 lb.	53,100 lb.
Weight loaded per foot coupled length	5,695 lb.	5,490 lb.	5,985 lb.

"ONE HUNDRED PERSONS KILLED" is the heading of a press despatch of September 15 reporting the derailment of a heavily convoyed grain train at Fastov, near Kieff, Ukraina. The wreck was caused by the removal of rails at a point where the train, made up of 61 cars, was running down grade. The grain was being carried to the Donetz basin to be distributed to miners.

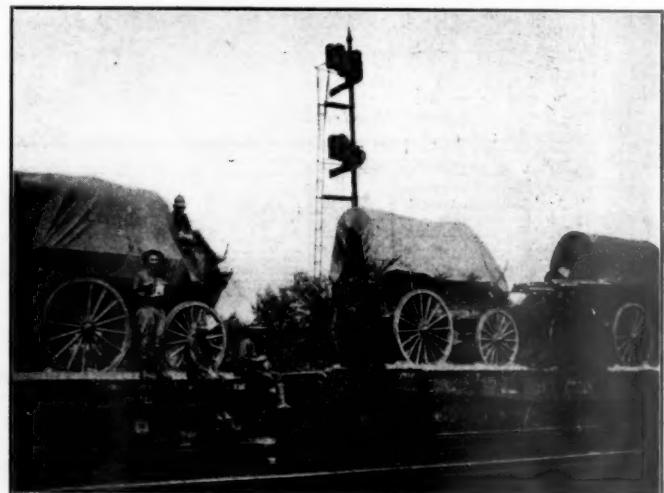


Photo by International.

Troops Leaving Camp Dix, N. J., for West Virginia Coal Fields

Roadmasters Hold Annual Meeting at Chicago

Thirty-ninth Convention of the Association Characterized by
Good Reports, Active Discussion and Interest in Exhibits

THE THIRTY-NINTH convention of the Roadmasters' and Maintenance of Way Association and the tenth annual exhibit of the Track Supply Association were held at the Auditorium Hotel, Chicago, on September 20-22, inclusive, with an attendance of 500. The program and character of the reports and papers presented, in line with those of recent years, mark a steady advancement in the work of the association. The proceedings this year included the presentation and discussion of the reports of five committees and three individual papers, abstracts of which follow:

P. F. McManus, general superintendent of the Elgin, Joliet & Eastern, Joliet, Ill., addressed the convention at its opening, outlining many of the advantages which could be had by close attention to the papers and also by active participation in the discussion. In the course of his remarks he offered as the ideal toward which all railroad men should strive, the furnishing of adequate transportation to the public at a reasonable cost. In the attainment of this ideal he emphasized the importance of the position which the Roadmasters' and Maintenance of Way Association now holds. He pointed out the many possibilities for economy which could be secured by a loyal endeavor on the part of the roadmasters and supervisors to develop their present methods in the handling of labor and materials. He also spoke of the exhibit of maintenance of way appliances and urged that every advantage be taken of such an opportunity to study the design and application of modern equipment.

The President's Address

In his address, President Wiltsee made mention of the fact that the association is not only one of the oldest associations of railroad men, but it is the oldest organization from the point of view of never having had a break in its activities. During this period there have been many changes in the track structure and in the methods of carrying out the work. The railroads are now passing through a severe and trying time of readjustment and for that reason there is all the greater need for economical maintenance, especially in the handling of labor and the conserving of materials. In outlining the advantages of participating at the meetings of the association, he stated that it was a poor man who could not derive some good from a convention where topics in which he is vitally interested are discussed thoroughly. Active participation in committee work was urged strongly by President Wiltsee as one of the best means to advance the standing of the association through making its papers and work an authority on maintenance of way matters. He dwelt particularly upon the benefits which would accrue to the members themselves since, by taking an active interest in committee work, the general knowledge of the men themselves was broadened greatly and their circle of acquaintances was increased, all of which contributes much towards a successful life.

Address by L. W. Baldwin

L. W. Baldwin, vice-president of the Illinois Central, Chicago, addressed the convention on the opportunities for effecting economies in maintenance of way work. In his opinion there was a need for two prime aids in the conduct of the work, the establishment of an effective measure of the results obtained and the general application of mechanical devices to increase production. The unit of measure is particularly important as an incentive for increased production by the

forces. It is his experience that few men do their best work unless it is noticed by those above them in rank. There is no satisfaction in working unless one knows what he is accomplishing. This subject now has a new significance because of the relatively higher wages being paid by the railroads, affording them an opportunity for selecting more intelligent, reliable and efficient men. This can be accomplished effectively only through some means of measuring their output. Records of work done also serve as a stimulus for rivalry among the forces.

Mr. Baldwin presented a long list of devices which have demonstrated their value in effecting economies in maintenance of way work. He also pointed to the need of improvement in many of these equipments and to the opportunities for further development. In closing he pointed to the gradual improvement in the general railway situation, calling attention to the fact that whereas the roads earned an actual deficit during January and February, the earnings for the other four months of the half year were enough to show an appreciable return. The present danger, he said, lay in the assumption of a viewpoint that was too optimistic as a result of which there is agitation for lower rates. In this connection he showed that the railway men can play an important part, saying "Railway men of all grades need to realize this and to exert their influence in such a way that the public will be led into a correct attitude."

The Budget System as Applied to Track Work By C. A. Morse

Chief Engineer, Chicago, Rock Island and Pacific, Chicago

The question before the railroads today is how to reduce their cost of operation, and at the same time keep the property from deteriorating. About 20 per cent of the cost of operation of a railroad is for the maintenance of way and structures, and about two-thirds of that 20 per cent is spent on roadbed and track. If, therefore, you can, by better maintenance methods, reduce the cost of your work 10 per cent, you will be reducing the cost of transportation on your road $1\frac{1}{3}$ per cent.

Where to Economize

Let us see how we should proceed to enable us to make a saving in maintenance of way as a whole, two-thirds of which would be in the track department. Maintenance of way work is composed of a great variety of classes of work, scattered over the entire railroad. Some of it must be done to keep the railroad safe for the operation of trains, other portions of the work are done in replacing parts that are worn out, or so nearly worn out that they will not continue to serve their purpose, while still other expenditures are made to retard deterioration or to avoid large expenses in the near future on the principle that "a stitch in time saves nine."

In addition to the class of expenditures named, there are those that are made to prevent damage claims, among which are the upkeep of right of way fences. Another class is that which makes for neatness in the general appearance of the property and tends to encourage the employees to do good work and to take a pride in the property. This is generally referred to as standardization, which simply means that the

work is performed in the same way on all portions of the railroad and not in a "hit or miss" manner.

In addition to these classes of work there is the work chargeable to maintenance of way in connection with additions and betterments to the property. On the average well maintained railroad the expenditures for additions and betterments on roadway and structures will amount to about one-fourth of the total maintenance of way expenses, and in carrying out this addition and betterment work, there will be maintenance charges about equal to the addition and betterment charges; so that about one-fourth of the maintenance of way charges are in connection with addition and betterment authorities. Of the remaining three-fourths of the maintenance of way expenses about one-half are required for ordinary upkeep, the other half, or three-eighths of the whole, are expended on the class of work that I have referred to as desirable and in many cases necessary, but which, if deferred, will not interfere with the safety of train service.

It is this three-eighths or 37.5 per cent of the total maintenance of way expenses that is deferred in times of business depression and done in greater quantity when earnings permit of the expenditures. It is this 37.5 per cent which covers the deferred maintenance, if there is any, on the railroad but it is also where there is the greatest opportunity for careful supervision and good judgment to see that it is expended on the parts of the railroad where it will earn a proper return, and not where it is of no real benefit to the property as a whole.

There is no real difference between this money and that required for "A. & B." work—it is only a matter of accounting. Revisions of the accounting methods have in recent years caused much that was formerly charged to maintenance of way to now be charged to additions and betterments.

Need for a Budget

We are all loud in our praise of the decision of Congress to put a budget system into effect in connection with our national expenses, and feel that it will help to keep down expenses and reduce our taxes. The same thing applies, only on a smaller scale, to the expenditures on the railroads, not only on the comparatively small amount charged to additions and betterments, but to the much larger part charged to operating expenses. If the budget is made in the detail that it should be, it can be either authorized as a whole or "A. F. E.'s" made to cover the separate items.

There will be many cases where other items will be submitted with a request that they be substituted for some item in the budget, in which cases an "A. F. E." should be required in order that the necessity or desirability of the substitution can be investigated carefully and decided by the head of the department.

The total amount of money covered by the budget should be apportioned over the different months to insure a fairly uniform rate of expenditure during the year. This need have no reference to the items that go to make up the monthly expenditure—the local officers are best qualified to decide what work they will do at any particular time and should not be interfered with in carrying out their own plans for doing the work.

To facilitate the working out of a budget for maintenance of way work the different portions of the railroad should be classified, and certain classes of work should only be permitted on the more important portions of the road—others only on certain parts. In this way the matter of considering expenditures would be simplified, as it would be known that certain standards or certain classes of work would not be permitted on unimportant branch lines. Many economies could be worked out with a careful classification of the railroad as to maintenance of way work.

Now, with our budget system worked out and in force we come to the economies that may be secured in carrying out

the work. The authority for the expenditure of money on a piece of work should carry with it the authority to order the material direct from the store department, and the authority to put on the necessary men to carry out the work in accordance with the judgment of the local officer in charge of the work. It should not be necessary to have any signature but his own on a requisition, but the requisition should show the item on the budget, or the "A. F. E." number where "A. F. E.'s" are issued, for which material is being ordered. The same should apply to any additional help that is required to perform the work. A sheet accompanying the pay roll should show that any new names appearing on that roll are employed on work authorized by "A. F. E. (No. —)," or "item (No. —)" of the approved budget, it being understood that when their services are no longer needed on that work that they will be dropped or transferred to some other authorized work.

The cost of doing work is increased immensely by the "red tape" on many roads, connected with ordering of material and getting authority for the help, which in the judgment of the man in charge is necessary to handle the work in an economical way.

Many officers seem to fear to give their subordinates a free hand in the performance of authorized work, but with a proper system of checking up completion reports and with proper cost statistics compiled on the railroad, there will be a check on the performance of each man who has charge of work, and the man will take pride in making a good showing if he is furnished, as he should be, with statistics that show what others are performing similar work for. Such data are also necessary in order to estimate work properly that is being planned.

Cost Data Sadly Lacking

It is a peculiar thing, but a fact, that practically all of the cost data that are kept in the maintenance of way department are the result of individual effort, and made up by the individual, because he finds that he must have some such data to enable him to estimate work. There are very elaborate and detailed statistics of cost of everything in the transportation department, but the only thing that is furnished in regard to maintenance of way is the cost of maintenance of way per mile of road, and the cost per 1,000 gross ton miles; and these are of no value in comparing one division with another, as the variation in class of railroad and in density of traffic changes the results to such an extent as to nullify any apparent comparison.

Maintenance of way and maintenance of equipment make up about 45 per cent of the total operating expenses of a railroad and transportation makes up about 50 per cent. As stated above, elaborate and detailed statistics are kept and published, showing various items that go to make up this 50 per cent of the total operating expenses, and absolutely nothing of any value is kept or published as to items that go to make up 45 per cent of the operating costs on the majority of the railroads of this country.

From the viewpoint of the transportation officer, good track, good power and rolling stock are essential to reduced transportation expenses and good service, and are cheap at any cost. This is true, but there is no reason why the same careful study should not be given to furnishing these essentials at a minimum cost, as there has been given to conducting transportation at a minimum cost.

If we are going to do this we must have cost data statistics covering maintenance of way and maintenance of equipment; we must have these kept in a uniform way on all railroads, and we must have them published so that each road and each division on a road may know what it is costing to perform these items on the other road, or on the other division. Also in the case of maintenance of way they should be kept on each roadmasters' territory so that the superinten-

dent may be able to see what each roadmaster is doing in the way of keeping down costs on his division.

A large or a small improvement program on a division makes a decided difference in the figures. A roadmaster and a section foreman are judged by the track they have, regardless of the amount of money they spend in getting it. Any one can do maintenance of way work if he has money enough, but what is there to it—nothing to awaken any competition, nothing to make a man plan how he can do his work the cheapest.

In the majority of cases force is allowed on the basis of so much to the mile of main line, regardless of sidings and turnouts. Some roads have a method of track equation by which track is equalized as to different things that take extra labor. All roads should do this in order to distribute forces equally.

Need Standard Basis

Possibly one of the reasons why nothing has been done in the way of keeping maintenance of way statistics is that there must be some concerted action in defining the units, so that the data will be comparable. One of the first things necessary is to agree on a classification of the different portions of a railroad. The cost of laying rail on a track having 20 trains over it in working hours will be much in excess of the cost on a piece of road having but 10 trains over it during working hours. The cost of inserting ties will vary with the class of ballast, and between ties put in without raising the track and those put in while lifting the track out of face for a new lift of ballast. Track work in large yards should be shown separately, also track work on passing and side tracks. Classes of ballast should be made so that work on unballasted track could be compared with similar work and work on lines ballasted with similar classes of ballast could be compared.

The Roadmasters' Association is well fitted to study this matter, and I would like to see the association appoint a committee to report next year, to classify the different types of track and recommend certain cost data forms for collecting and reporting the cost of doing certain units of work on each class of track.

Classification and Distribution of Second Hand Rail

The term second hand rail includes all rail which has been used in actual service and which has been removed from track for any reason whatever. The only practical reason for having a classification of second-hand rail is to have a basis for utilizing such rail in track that will tend to increase the service without unduly increasing the expense of items of work which are necessary to maintain track properly, and in this manner contribute to more economical track maintenance.

The practical result of applying a classification of used rail to actual maintenance work should be: 1. To reduce to a minimum the amount of new rail purchased from year to year. 2. To secure a minimum annual expense for labor and material consumed in connection with rail renewals without unduly increasing other items of expense necessary to maintain track properly. 3. By securing minimum expense for the purchase of new rail and also minimum expense for labor and material used in connection with rail renewals, at the same time avoiding increased expense for other items of work necessary to maintain track properly, a second-hand rail classification is an effective means toward securing more economical track maintenance.

The supply of second-hand rail during any year depends on the amount of new rail which the management of a railroad may decide to buy for renewal purposes. The amount of rail purchased is not necessarily determined on the basis of the quantity needed in order to secure the most economical track maintenance, but primarily depends on the amount of

money available, and as long as railroad corporations must adjust their expenses to their revenues, variations in the amount of rail purchased from year to year must be expected.

On account of variations in the supply of used rail depending on elements which have but little influence on the demand, it is not possible to match the supply and demand of second-hand rail, and this inability to match supply and demand makes necessary a flexibility in any standard or measure that may be fixed for assigning used rail to a particular service. The result of these changes in relationship of supply and demand is to make it necessary to assign used rail of varying quality or standard to similar services during different periods.

In addition to this variation between the supply and demand of used rail, there are also other variables which must be considered. The relationship between branch line requirements and main line requirements varies from time to time. The relationship between the length of main line service and the length of branch line service which will result in greatest rail return varies from time to time. There is a variation in the cost of making rail renewals on main tracks and in branch tracks which influences the manner in which rail should be utilized, the high cost of main line renewals, together with the difficulty with which the work is accomplished under certain circumstances, being almost equal in importance to the cost of the rail itself.

In order to secure the maximum utilization of all rail in track and having in mind the principles and details involved, the following classification of second-hand rail has been prepared:

CLASS NO. 1.—MAIN LINE RELAYER RAIL

Class No. 1.—Main line relayer rail shall include rail removed from track which, either in the condition as taken out of track or after receiving preparatory work, is suitable for use in main line running tracks. Rail for this purpose shall meet the following conditions:

First—Rail for use in tangents shall be rail which was previously used only in tangent track. If uniformly curved, rail which was previously used in curves may again be used in curves of not greater radius than the one where it was previously used.

Second—Rails shall be straight in line and surface, except that rails for use in curves may be uniformly curved to not less radius than that of the curve in which they are to be used.

Third—No driver-linked, twisted or distorted rail shall be included in this class.

Fourth—No broken or defective rail removed from track shall be included in this class.

Fifth—Rail shall not be less than 24 ft. in length.

CLASS NO. 2.—SECONDARY MAIN TRACK AND HEAVY TRAFFIC BRANCH LINE TRACK RELAYER RAIL

Class No. 2.—Secondary main track and heavy traffic branch line track relayer rail shall include rail removed from track which, either in the condition as taken out of track or after receiving preparatory work, is suitable for use in secondary main and heavy traffic branch line running tracks. Rail for this purpose shall meet the following conditions:

First—Rail for use in tangents shall be rail which was previously used only in tangent track. Curved rail may again be used in curves of a radius not greater than where previously used.

Second, third, fourth and fifth requirements same as for Class No. 1.

CLASS NO. 3.—LIGHT TRAFFIC BRANCH LINE RELAYER RAIL

Class No. 3.—Light traffic branch line relayer rail shall include rail removed from track which, either in the condition as taken out of track or after receiving preparatory work, is suitable for use in running tracks of light traffic branch lines. Rail for this purpose shall meet the following conditions:

First—Rail for use in tangents shall be rail that has been previously used in tangent track or in curves of not more than two degrees. Rail

which has previously been used in curves may again be used in curves of not less degree than where originally used.

Second—Rails shall be straight in line and surface, except that rails for use in curves may be uniformly curved to not less radius than that of the curve in which they are to be used. They shall be free from driver kinks which cannot be removed without cracking or otherwise damaging the rail. They shall also be free from twist or distortions which prevent an even bedding of the rail throughout its length.

Third—Same as fourth requirement Class No. 1.

Fourth—Same as fifth requirement Class No. 1.

CLASS NO. 4—SIDE TRACK RAIL

Class No. 4—Side track rail shall include rail removed from track which, either in the condition as taken out of track or after receiving preparatory work, is suitable for use in side tracks over which traffic passes at slow speed.

Rail for this purpose shall be any rail removed from track which cannot be made to comply with the requirements of Class 1, 2 or 3, except as to length, but which is suitable for use in slow speed tracks, and shall meet the following conditions:

First—No rail removed from track on account of a defect shall be included in this class.

Second—Parts of broken rails removed from track, which are otherwise satisfactory, shall be included in this class, provided the break did not result from a defect.

Third—Rail shall not be less than 15 ft. in length.

CLASS NO. 5—FROG AND SWITCH REPAIR RAIL

Class No. 5—Frog and switch repair rail shall include rail removed from track which, either in the condition as taken out of track or after receiving preparatory work, is suitable for use in frog and switch work. Rail for this purpose shall meet the following conditions:

First—It shall be suitable, in all respects except as to length, for use as Class 1, 2 or 3 second hand rail.

Second—It may be of any length less than 24 ft.

Rail classed as frog and switch repair rail shall be subdivided into Class 1, Class 2 or Class 3, according to what its classification would be if it were 24 ft. or more in length.

CLASS NO. 6—SCRAP

Class No. 6—Scrap shall include all rail removed from track, which, because of defects, lack of strength, length, crooks, or for any other reason, cannot be classified in any of the above classes.

The Maintenance and Construction

of Railroad Crossings

The committee recommended the use of manganese construction for crossings in main lines carrying heavy traffic and high speed trains. On double tracks it was recommended that one rail only be used between joints, doing away with center joints between crossings. The placing of timbers under the rails of the track carrying the heaviest traffic was favored at a square crossing instead of placing the ties diagonally, as it was believed that a better opportunity is afforded to tamp the timbers and to give them a more equal bearing than with ties. The use of ties was under diagonal crossings.

The committee recommend the use of a plate extending the full length of the crossing under those sides carrying the heaviest traffic, in place of corner plates. Experience has shown that in tamping under the timbers or ties under the corners of crossings where corner plates are used it is difficult to secure a solid foundation, as the plates are ordinarily too wide.

On all high speed main line crossings, where there is no likelihood of track changes, the committee recommended that a reinforced concrete slab be placed under the crossing at a sufficient depth below the rail to enable 8 to 10 in. of ballast to be inserted above the slab with cross ties to carry the rails. The use of rail anchors in all tracks about crossings as far back as the derail in each line was favored because a crossing should be placed in position and then anchored to hold it there. By anchoring each track as far back as the derail this result will be accomplished.

D. O'Hern, chairman, roadmaster, E. J. & E., Joliet, Ill.

Methods of Stimulating Friendly

Rivalry Among Track Forces

Rivalry is created among track forces by the application of one or more of the following methods, practices or systems:

One method that is in common use on several railroads requires an inspection in the spring and in the fall. In the spring the roadmaster or other maintenance officers go over the division with the purpose of making a program of the season's work and at the same time taking notes of the conditions on each section. In the fall an inspection is made and each section foreman is provided with a copy of each section record, in order to give him an idea of the progress that the other foremen have made in the season's work. Cash prizes, medals, sign posts, and also division prizes, are awarded to the best sections, and also to the division showing the most efficient work done during the year. In connection with the premium system the committee recommended that a foreman who receives this prize for two consecutive years be offered an inducement to keep his section in advance of the others by allowing him a higher rate of pay.

The following practice is in effect on several railroads and is conducive to higher efficiency and to the stimulation of friendly rivalry among the track forces: After information for the entire division has been obtained and a program decided upon and each foreman is given a chart showing the program as it applies to all sections on the division or subdivision. This is followed each month with a percentage chart, by sections, showing the percentage of work done, in ties, line, surface, etc., and an analysis of the figures showing who is making the best record with the allotted number of men, so that each foreman is familiar with what the other foremen are doing.

One of the best ways to develop rivalry among the foremen and also among the men is to assemble them at meetings for the discussion of their common problems. These meetings not only broaden the views and interest of the men, but tend to create enthusiasm and a desire to excel. If possible, the higher officers should attend, and address the meetings.

A supervisor should establish a continuous personal contact with his foremen and make an effort to instill a live interest among them in their work at all times throughout the year. There is no better way to accomplish this than for the supervisor to visit the men and talk over their work and conditions with them on the ground, for this gives a foreman confidence and an exact idea of what is wanted. A verbal comparison of his work with that of the foreman on each side of him will start a "friendly rivalry" that will spread over the entire division.

Committee: George Koontz, chairman, roadmaster, D. & H., Carbondale, Pa.

The Track Supply Association

The exhibit of the Track Supply Association included individual displays by 58 manufacturers of materials and supplies relating to track maintenance, this being one of the largest exhibits ever held by the association. The location of the exhibit in a room adjacent to the meeting hall added greatly to its value to those attending the convention. A list of the firms exhibiting, the materials and devices exhibited and the names of the representatives in attendance, is given below.

Addressograph Company, Chicago; addressographs and graphotype machines; W. G. Ryan, J. E. Miles and E. F. Steffen.

Air Reduction Sales Company, New York; welding and cutting torches, acetylene, oxygen, samples of welded switch points and welded rail ends;

H. H. Melville, A. W. Brown, Edward L. Fiddymont and A. B. Brown.

American Chain Company (Reading Specialties Division), New York;

rail clamps, derailleurs, rail benders; A. H. Weston and J. J. O'Connell.

American Hoist & Derrick Company, St. Paul, Minn.; photographs of ditchers; W. B. Maurer and Miss H. Haller.
American Steel & Wire Company, Chicago; fence posts and woven wire fencing; L. P. Shanahan, M. E. Evans, D. R. Waterman and John Collins.
American Valve & Meter Company, The, Cincinnati, Ohio; switch stands and track appliances; J. T. McGarry, F. C. Anderson and Dan J. Higgins.

Balkwill Manganese Crossing Company, Cleveland, Ohio; model manganese crossing; S. Balkwill.

Bethlehem Steel Company, Bethlehem, Pa.; switch stands; Neil E. Salsich, R. W. Gillispie, E. H. Gambart, R. E. Belknap and J. F. Hennessy.

Bucyrus Company, South Milwaukee, Wis.; moving pictures of spreader plow and other excavating machinery; E. G. Lewis, H. M. Swigart, H. L. Palmer, G. A. Morrison, M. J. Woodhull and Morgan Bogart.

Carbic Manufacturing Company, Duluth, Minn.; acetylene lights, welding generator, welding and cutting equipment and motor car light; A. D. Guthrie, D. C. Duncan and C. H. Bolinder.

Chicago Malleable Castings Company, Chicago; rail anchor tie plate, tie plate with key and rail clips; Warren Osborn, J. S. Llewellyn, A. R. Anderson and W. L. Beaudway.

Chicago Manufacturing & Distributing Company, Chicago; ratchet track bolt wrench, ratchet screw spike wrench and other ratchet wrenches; J. A. Slater, B. W. Conlin, J. D. Hiatt, H. I. Hiatt and R. J. McKee.

Creepcheck Company, The, Hoboken, N. J.; rail anchors; P. E. Browne and John T. Reagan.

Crerar, Adams, & Company, Chicago; bonding drill, track drill, rail saw, die starters, jacks, snow brooms, shovels, etc.; Russell Wallace, G. D. Bassett, E. C. Poehler, W. I. Clock, J. A. Martin and C. W. Gregory, E. Mahlike.

Duff Manufacturing Company, The, Pittsburgh, Pa.; jacks; C. N. Thulin and E. E. Thulin.

Elliot, Frog & Switch Company, East St. Louis, Ill.; guard rail clamps, switch stands and switch rods; H. J. Elliot and W. J. Fairback.

Emulsified Asphalt Company, Indianapolis, Ind.; C. E. Jefferson.

Fairbanks, Morse & Co., Chicago; spike puller, track wrench; A. A. Taylor, B. S. Spaulding, L. H. Matthews, E. C. Golladay, F. J. Lee, F. M. Condit, G. W. Lewis, H. L. Hilleary and P. H. Gilleland.

Fairmont Gas Engine & Railway Motor Car Company, Fairmont, Minn.; gas engine for motor cars; H. E. Wade, W. F. Kasper, W. D. Brooks.

Frictionless Rail Company, Boston, Mass.; models and photographs of frictionless rail; S. W. Simons, John W. McManama.

Hauck Manufacturing Company, Brooklyn, N. Y.; thawing outfits, kerosene torches, circular flame burners, blue flame oil burners and syphon type furnace burners; Willis C. Squire and G. A. Nelson.

Hayes Track Appliance Company, Richmond, Ind.; model derail; H. J. Mayer, S. W. Hayes, O. M. Kendall, H. H. Jenkins and R. H. Guasepohl.

Headley Good Roads Company, Philadelphia, Pa.; bituminous railroad crossing; F. X. Kern.

Ingersoll-Rand Company, New York; tie tamper and air tools for track work; W. H. Armstrong, J. N. Thorp and J. P. Gillies.

Kalamazoo Railway Supply Company, Kalamazoo, Mich.; light inspection motor car; J. McKinnon, F. E. McAllister, W. E. Winters and H. R. Miller.

Kilbourne & Jacobs Manufacturing Company, Columbus, Ohio; photographs of automatic air dump cars with apron attachment; Jay N. Markel.

Lundie Engineering Corporation, The, New York; tie plates; W. S. Boyce and W. Brooke Moore.

Maintenance Equipment Company, Chicago; friction car stop, fence posts, derail; rail layer, power ballast screen and switch; H. C. Holloway, J. A. Roche and Ray Downey.

McVicker Safety Tie Plate Company, Milwaukee, Wis.; E. M. McVicker and A. W. Tabert.

Mudge & Company, Chicago; railway motor car; Karl J. Eklund, Clyde P. Benning, John M. Mulholand, Burton Mudge.

National Lock Washer Company, The, Newark, N. J.; nut lock; J. Howard Horn, R. L. Cairncross and A. T. Thompson.

National Malleable Castings Company, Cleveland, O.; wrecking hook, iron washers, rail braces and tie plates; J. A. Slater, G. R. Rasmussen, C. H. Krakau and L. S. Wright.

North Western Motor Company, Eau Claire, Wis.; railway motor car and model engine; F. W. Anderson, R. R. Rosholt and A. H. Nelson.

Oxweld Railroad Service Company, The, Chicago; welding and cutting appliances; W. H. Kofmehl, L. C. Ryan and C. M. Marshall.

P. & M. Company, The, Chicago; rail anchors and anti-creeper; S. M. Clancey, G. E. Johnson, P. V. Samuelson, D. T. Hallberg, J. J. Gallagher and J. E. Mahoney.

Pocket List of Railroad Officials, The, New York; Charles L. Dinsmore.

Positive Rail Anchor Company, Marion, Ind.; guard rail, rail anchors, rail braces, guard rail plates and braces and tie plates; A. H. Told and L. C. Ferguson.

Q & C Company, The, New York; rolled steel compromise joint, rail joint, electric snow smelter for switches, guard rail clamp, rail bender, derail and steel fence posts; R. J. McComb, J. L. Terry, L. Thomas and F. G. Peterson.

Rail Joint Company, The, New York; insulated joints, compromise and standard joints; Alex. Chapman, G. H. Larson, G. T. Willard, C. B. Griffin, Charles Jenkinson, R. W. Payne and Thomas Ryan.

Railroad Supply Company, The, Chicago; tie plates and derails; A. H. Smith, E. P. Gowing, G. W. Nibbe and M. J. Fox.

Railway Review, Chicago; copies of paper; Harold A. Smith, W. M. Camp, Arthur E. Hooven and C. L. Bates.

Ramapo Iron Works, Hillburn, N. Y.; switch stand, double shoulder switch plates, manganese switch point; W. C. Kidd, R. J. Davidson, Jr., J. B. Snow, J. B. Strong and T. E. Akers.

Reade Manufacturing Company, Jersey City, N. J.; photographs of chemical weed killing machines; R. H. Bogle and W. L. Geggus.

Reliance Manufacturing Company, The, Massillon, Ohio, nut locks; H. C. Mull and H. J. McGinn.

Safety Guard Rail Lock Company, Orlando, Fla.; model safety guard rail lock; W. L. Daugherty.

Sellers Manufacturing Company, Chicago; tie plates; G. M. Hogan, T. D. Crowley and R. A. Van Houten.

Simmons-Boardman Publishing Company, New York; copies of papers and cyclopedias; L. B. Sherman, E. T. Howson, F. H. Thompson, B. J. Wilson, F. C. Koch, W. S. Lacher, D. A. Steel and J. M. Rutherford, Milburn Moore, R. H. Smith, James Currie.

Superior Supply Company, Chicago; John B. Seymour, C. A. Gieles, J. H. Erby and W. R. Sostheim.

Templeton, Kenly & Co., Ltd., Chicago; track jacks, car jacks, pole jacks and emergency jacks; W. D. Templeton, L. E. Allen, S. A. Nelson and A. C. Lewis.

Track Specialties Company, New York; spikes, insulated bolts, guard rail clamps, rail brace, compromise joint, rail joint, anchor plate, insulated joint, tie plate, derail, car stop, car replacer, etc.; John A. Bodkin.

Union Switch & Signal Company, Swissvale, Pa.; insulated rail joint; J. J. Cozzens and George Marloff.

Verona Tool Works, Pittsburgh, Pa.; track tools, nut locks, and rail joint springs; E. Woodings, W. W. Glosser, P. L. Laughlin, A. T. Richardson, F. B. Nimmo and J. S. Wincrantz.

Warren Tool & Forge Company, The, Warren, Ohio; track tools; H. C. Mull and George Konold.

Werner Machine Company, Inc., West Allis, Wis.; spike shaper; E. J. Wind and F. A. Gardner.

William Pharton, Jr., & Co., Inc., Easton, Pa.; manganese steel one piece guard rail, photographs of manganese steel frogs; H. F. McDermott, S. G. Llewellyn, Victor Angerer, George R. Lyman, J. H. Hock and F. H. Lehecka.

Woolery Machine Company, Minneapolis, Minn.; gas engine for motor car; H. E. Woolery.

Wyoming Shovel Works, The, Wyoming, Pa.; track shovels, spades, scuffle hoes and picks; H. T. Potter, Stanley H. Smith, G. E. Geer and E. L. Ruby.

Wood Shovel & Tool Company, Piqua, Ohio; shovels, spades and scoops; C. L. Butts and M. H. Lytle.

Other Features of the Program

J. H. Waterman, superintendent of timber preservation, Chicago, Burlington & Quincy, gave an illustrated lecture on the results obtained from the use of treated ties. This consisted largely of an object lesson based on the test tie sections which have been maintained by the Chicago, Burlington & Quincy for the last 12 years or more. By means of photographs and tables he demonstrated how much greater the life of treated ties is as compared with even the best species of wood used untreated. He was particularly emphatic in pointing out that white oak untreated ties do not give as good service as treated ties of what are termed some of the "inferior woods" when properly protected against mechanical wear.

Other features of the program included a paper by H. L. Pierce, supervisor, Pennsylvania System, Cresson, Pa., on "The String Lining of Curves," comprising a detailed exposition of several methods by which curves may be lined without the use of surveying instruments. The committee report presented by E. P. Hawkins, division engineer, Missouri Pacific, Wichita, Kan., covering "The Most Economical Method of Renewing Cross and Switch Ties," contained explicit instructions on the methods of determining the allotment of ties, methods of handling and the program for carrying on tie renewals in the most expeditious manner. A committee on Records and Accounts presented a number of forms for use by the foreman and supervisor and a digest of the practice on several roads.

L. F. Loree Speaks at Annual Dinner

The annual dinner was held in the Auditorium Hotel on Wednesday evening. L. F. Loree, president of the Delaware & Hudson, was the speaker of the evening. He said in part:

"I think it may be taken as a general proposition that the foundation of good railroading is good track and that the foundation of good track is good drainage. It is in this latter respect that our practice falls far short of European standards. In other respects, our maintenance practice is fully as good and in many respects much better.

"What the transportation officer has a right to look for is track in proper surface, alinement, gage and curve compensation, resting upon a minimum of 10 in. of ballast that will readily dispose of storm water and melting snow, upon a roadbed properly drained, free from soft spots, of sufficient width to support the track, and with suitable runways ahead of the switch points to enable their safe and convenient

handling. No effort should be spared to see that these requisites receive adequate attention.

"But however interesting it might be to take up these matters and, in detail, the means of handling them, they are not the most important things that press for attention at the moment. What we have to do is to rescue these properties, from which close to ten millions of people get their living, from the deplorable state of demoralization in both the personnel and the upkeep to which they were reduced by the administration of the director general.

"There are three ways to improve the character of the personnel: (1) employ a better class of men; (2) educate those kept; and (3) discharge the inefficient and incompetent.

"The greatest difficulty in securing competent help, and in honest, capable workers securing positions of trust, exists in the very limited number who may be known intimately by anyone employing others in positions of responsibility. Many are in need of faithful and efficient help. Many deserving workers need employment. The ordinary employment agency but illy stops a portion of the gap. We ought all to address ourselves to the building up of better means of handling this important question. If the employee is selected carefully and, on physical examination, is found to be free from the common defects and is reasonably intelligent, no effort should be spared to explain to him both the reasons and the methods governing the work in which he is engaged and to bring him as rapidly as possible into a position not only to perform the work but to do it with a full appreciation of the results to be attained and the underlying reasons therefor.

"Control of the men can only be maintained by supervision and by discipline. Such is the constitution of man that there is always a small but turbulent minority against whom we hold our properties, our lives and our religion itself at the price of the jail, the penitentiary and the gallows. Like bad order cars, bad order men should be kept down to about 4 per cent of the total. If they were allowed to run up to 12 per cent they would ruin us. Railroad employment is to a marked degree regarded as a protected service. Once a man's name gets on the payroll, he is hedged about by constant and numerous artificial restraints as a permanent fixture. In gardening it is not sufficient that the soil be good and well sustained by fertilizers and the seed the best. The resulting crop depends largely upon cultivation and weeding out, and, similarly, in the railroad business carefully selected men, education and training will not suffice. To them must be added systematic and unwearied weeding. You must know your men and those that, from whatever cause, are palpable misfits you should eliminate at once.

"When you have brought the track to its proper condition and the men to the old relation of loyalty to the company and fidelity to the work with which they are entrusted, you will doubtless remain disturbed by the problems confronting us involving the economic conditions of the immediate future. I am sorry to say that I do not come to you with any message of optimism. On the contrary, I believe we are faced with conditions of such a trying character that they can only be surmounted, let alone shortened, by strenuous effort and self-denying frugality.

"Employment of the men annually added to the ranks of labor is conditioned upon additional capital investment, and the failure not only to maintain but to increase our savings for investment, while embarrassing to all, will work its greatest hardship upon labor. These capital investments are very large. For every man on the railroad payrolls, there is a capital investment of \$10,000. Where are you under present conditions to look for the savings that alone make possible additions to the ranks of labor?

"While we as a people exalt knowledge, its value is apt to be exaggerated. It is, after all, a kind of raw material, collected from various sources and retained largely through feats of memory. The significant thing is intelligence, the poten-

tiality of the human machine, the ability to learn, to think quickly and accurately, to analyze a situation, to maintain a state of mental alertness and to comprehend and follow instructions. It is not because you men have education but because you have intelligence that you occupy administrative positions of authority, and it is to the extent that you exercise this intelligence in the conduct of the affairs entrusted to you that we count with hope on overcoming the difficulties with which we are beset. What we look to find in you is a great fund of common sense, a power of knowing or hitting the mark as to things and ideas, the impression of the real, cautious, critical, shrewd and well-balanced, a sort of curb and correction of the errors that education and history so often produce."

Following the adjournment of the convention on Thursday the members and others visiting the convention made a detailed inspection of the Santa Fe's reclamation plant located in the Chicago terminal district, for which a special train was provided. This excursion included a stop at the Clearing yard of the Belt Railway of Chicago.

Train Order Deliverer

Eliminates Unnecessary Stops

AS A FURTHER STEP in eliminating unnecessary stops and expediting traffic, the Northern Pacific has installed for test a train order deliverer device over the entire second subdivision of its Idaho division between Spokane, Wash., and Kootenai, Idaho, a distance of 78 miles. The device was designed to eliminate unnecessary stops, slowdowns and accidents, which arise out of the use of hoops in delivering "19" orders. Ten machines were erected and first placed in service on April 26, 1921, and all passenger and freight engines and train crews on the Second subdivision are equipped with the catcher. This subdivision consists of a single track line equipped with automatic signals over which an average of 12 scheduled trains and 4 extras each way operate daily and on which an average of 37 orders are issued every 24 hours.

How the Machine Operates

The deliverer at present in use consists of a square post 13 ft. 6 in. high and having 6 in. sides and is set 6 ft. 6 in. from gage. Four angle irons are used on which a sheet metal covering is placed. A movable carrier 6 ft. long and to which the arms are attached between which the train orders are fastened, moving in a grooved guide, is raised and lowered by means of a ratchet and chain contained inside the post. The carrier is equipped with three sets of arms spaced 24 in. center to center, thus providing means for delivering three copies of an order to a train when this is necessary in connection with double-heading. The carrier when in position for delivering orders places the center line of the top rope 12 ft. 2 in. above top of rail; the middle rope 10 ft. 2 in. and the lower rope 8 ft. 2 in. above top of rail. This height can be made to meet conditions on any road. The arms consist of 1/2 in. by 1/2 in. square steel, the top pair being 27 in. long; the intermediate set 28 in. and the bottom ones 29 in. This variation in length is to prevent interference after the rope containing the train order has been caught and the arms have returned to their normal position, the top arm of each pair being raised to a vertical position by means of a spring attached inside the post, while the bottom arm of a pair drops down by gravity. The movable carrier, when not in use, is lowered to the bottom of the post which brings the arms low enough for the operator to reach for loading, after which it is raised to the proper height for delivery of orders to trains. The operator can then remove the handle to prevent tampering and pro-

ceed about his other work. The illustration will show the principles of its operation.

The cord to which the train order is attached consists of a 2-ft. piece of sash cord to the ends of which are attached spring clips for fastening over the hooks of the carrier arms. At one end of the rope carrier is attached a waterproof canvas bag 2 in. by 3 in. in size, somewhat similar to a tobacco pouch, in which the order is placed.

The catcher which is carried on the engines and as part of the way car or flagman's equipment consists of a $\frac{3}{8}$ in. by $\frac{3}{8}$ in. cold rolled steel bar 38 in. long, having a handle and guide stop on one end. At the other end for a distance of 14 in. is attached by means of rivets, the rope catching apparatus, which consists of a flat piece of medium hard steel $\frac{3}{32}$ in. by $\frac{3}{8}$ in. formed in the shape of a number of inverted Vs, the points projecting outward. Over these points is fastened a V-shaped spring which acts as a guard to prevent the rope from dropping out after once having

Results so far obtained would indicate that from an economic standpoint the use of this machine to replace the hoop system of train order delivery will result in considerable savings. For example, from a check made of the train sheets over a 90 day period, it was found that on the Idaho division 33 unnecessary stops were made because orders were missed under the hoop system. With this as a basis it was estimated that approximately 1,800 unnecessary stops under the hoop system were being made on the Northern Pacific system. These stops work a hardship on motive power and efficiency of train operation. If the enginemen fail to get the order the train is stopped and backed up, or, as it often happens, the conductor uses the emergency air valve, which causes severe shocks to the equipment and not infrequently a break in two, with consequent serious delays.

Better running time is made because it is unnecessary for a train to slow down in picking up the orders and because of the schedule, dispatchers often would not put out an order ("19" orders only are used on the Northern Pacific) to certain trains because of the chance that the train crew might miss it. Since the installation of the train order deliverer device on the Second subdivision, the dispatchers



The Deliverer Empty, Being Loaded, in Position, Order Caught by Engine and Train Crew

passed into the space provided for it between the adjacent teeth.

Operating Results

The catcher device is light enough not to be cumbersome or unwieldy and at the same time strong enough to operate properly. The guide casting used on the engines is attached to a square piece of steel of about $\frac{1}{2}$ in. by $\frac{1}{2}$ in. section, mounted vertically but a few inches from the front end of the side window of the cab. This can be moved up to a point for catching the order on the top carrier arm (in case of double-heading), or it can be left in the lower position just above the window sill, which corresponds to the position of the middle set of carrier arms. This guide casting can be fastened in position by a set screw and is arranged with a slot on top into which the catcher device is placed which, when being pushed out to the proper operative position, has a stop which fits in a slot on the back side of the guide casting. The design of this casting is such that it takes but an instant to drop the catcher device in place or to remove it. In double-heading, should a small engine be used, it would pick up the order at the 10 ft. 2 in. level, while a large engine would use the 12 ft. 2 in. level and the train crew would catch the order at the 8 ft. 2 in. level.

are putting out orders at points where they had previously refused to do so with the assurance that the order will be picked up, thus saving from 50 min. to an hour and a half on the running time.

Another item of economy is in connection with the saving on hoops and the assurance that an order or important message may not go under the train instead of being caught. The Northern Pacific uses 20,000 hoops a year, and from the test to date it would appear that one rope carrier will outlast about 200 hoops, or the equivalent of 10 cents against \$44.

It is expected that this device will eliminate many of the minor and fatal injuries due to the use of the hoop system. In cold climates the footing on station platforms and on engine and car steps is often insecure because of ice and snow. It removes the danger of an operator being struck by falling coal or by projecting stakes or timbers or swinging car doors. Minor accidents are caused by train and enginemen striking their hands against the hoops in catching them. The train order deliverer device was developed and patented by James A. Blair, dispatcher in the Spokane, Washington, office of the Northern Pacific, and is being made by the Blair Train Order Deliverer Company, Spokane, Washington.

Freight Car Loading

WASHINGTON, D. C.

OBSERVANCE of the Labor Day holiday resulted in a reduction in the number of cars loaded with revenue freight during the week ended on September 10, as compared with the previous week, according to the reports of the Car Service Division of the American Railway Association. The total for the week was 748,118 cars or 82,483 less than the preceding week and 135,297 cars under the corresponding week last year. It also was 198,852 cars less than were loaded during the corresponding week in 1919. Had it not been for the observance of Labor Day, loadings during the week would have shown an increase over the week before, the average number of cars loaded daily during the week of September 10 having been approximately 143,870 as compared with 138,433 during the preceding week.

Decreases compared with the week before were reported in the loading of all commodities. Loading of grain and grain products amounted to 54,457 cars as compared with 60,632 during the previous week. A total of 25,108 cars were loaded with livestock, which was 2,431 less than during the previous week, while coal loadings totaled 142,049 or 13,767 less than during the week of September 3. Coke loadings fell off 59 cars to a total of 4,599 and forest products dropped 3,274 cars which brought the total for the week to 42,145.

Except for grain and grain products, loadings of all com-

modities were less during the week than during the corresponding week in 1920. Reductions compared with the previous week were reported in all districts except the Pocahontas, where there was an increase of approximately 3,000 in the number of freight cars loaded.

The summary is given in the table below:

A further decrease of 8,768 in the number of surplus serviceable freight cars is shown by the report of the Car Service Division for the period September 1 to 8. The total surplus was 237,972, including 65,858 box cars.

The number of bad order freight cars showed a reduction for the first time in a year in the report for September 1. On that date the number of bad order cars was 374,087, or 16.2 per cent, as compared with 382,440, or 16.6 per cent on August 15. Of the box cars 17.8 per cent were in bad order as compared with 18.2 per cent on August 15.

The summary for the week of September 3 is given in the table at the bottom of the page.

THE ASSOCIATION OF RAILWAY EXECUTIVES will adopt the methods of the American Railway Association as to the voting power of the member roads. This allows to each road one vote for each 1,000 miles of line. Hitherto each road has been entitled to one vote regardless of its size. Henceforth assessments will be based on the gross revenues of each road from September 1, 1920, when the Federal guaranty ended, to August 31, 1921. The basis of assessments has hitherto been on the "standard return."

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS, COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO. FOR WEEK ENDED SATURDAY, SEPTEMBER 3, 1921

Districts:	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Merchandise L.C.L.	Miscellaneous	Total revenue freight loaded		Received from connections	
										This year 1921	Corresponding year 1920	This year 1921	Corresponding year 1920
Eastern	1921	7,784	2,809	43,291	1,181	4,399	2,792	58,989	60,679	201,924	238,461	207,621	276,866
.....	1920	7,143	3,075	51,932	3,510	7,829	10,892	49,310	104,770	.....	203,815	.....	244,067
Allegheny	1921	3,295	3,038	43,768	2,194	2,510	5,971	45,594	58,430	164,800	201,622	111,732	151,365
.....	1920	2,897	3,660	57,638	6,775	3,444	14,894	39,535	72,779	.....	198,474	.....	139,451
Pocahontas	1921	149	269	14,676	35	1,118	3	2,732	5,140	24,112	35,921	12,858	21,142
.....	1920	166	240	23,792	711	1,653	199	3,026	6,134	.....	34,466	.....	20,120
Southern	1921	3,627	1,747	21,540	417	14,457	220	36,965	32,828	111,801	128,428	60,575	74,473
.....	1920	3,713	2,075	24,485	1,607	18,949	3,019	35,256	39,324	.....	120,238	.....	71,481
Northwestern	1921	19,999	6,586	8,854	459	10,567	20,614	29,016	33,959	130,054	128,428	50,073	63,782
.....	1920	12,950	7,019	12,503	1,493	14,943	43,453	29,666	39,140	.....	160,406	.....	65,834
Central Western	1921	19,654	10,314	18,981	152	5,837	745	31,448	45,842	132,879	161,167	53,537	72,731
.....	1920	11,537	10,641	23,155	473	7,262	4,496	31,956	44,130	.....	127,622	.....	68,265
Southwestern	1921	6,124	2,776	4,706	220	6,531	767	16,260	27,647	65,031	133,650	46,593	51,455
.....	1920	4,167	2,338	5,495	105	8,149	851	17,090	24,189	.....	127,622	.....	50,561
Total all roads	1921	60,632	27,539	155,816	4,658	45,419	31,112	220,894	284,531	830,601	961,633	542,989	711,814
.....	1920	42,573	29,048	199,000	14,674	62,229	77,804	205,839	330,466	.....	904,393	.....	659,779
.....	1919	47,192	33,300	178,551	9,856	60,878	69,404	134,111	371,111	.....	.....	.....	.....
Increase compared 1920	1920	18,059	.....	.....	.....	.....	.....	15,055	.....	.....	.....	.....	.....
Decrease compared 1920	1920	.....	1,509	43,184	10,016	16,810	46,692	.....	45,935	131,032	.....	168,825	.....
Increase compared 1919	1919	13,450	.....	.....	.....	.....	.....	86,783	.....	.....	.....	.....	.....
Decrease compared 1919	1919	.....	5,761	22,735	5,198	15,459	38,292	86,580	73,792	.....	.....	116,790	.....
August 27	1921	59,505	28,070	161,612	4,606	46,460	30,035	219,165	280,256	829,709	1,001,308	951,653	540,315
August 20	1921	59,875	29,110	154,140	4,436	44,583	32,370	216,752	275,170	816,436	968,103	913,207	540,408
August 13	1921	61,560	26,835	158,260	4,286	45,331	32,942	213,046	256,703	808,965	971,269	832,439	530,550
August 6	1921	58,622	26,610	147,273	4,218	43,460	32,058	209,336	263,264	784,781	935,730	872,073	522,247

*Detail figures for Michigan Central for 1919 not given.

SUMMARY—ALL DISTRICTS, COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO. FOR WEEK ENDED SATURDAY, SEPTEMBER 10, 1921

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Merchandise L.C.L.	Miscellaneous	Total revenue freight loaded		Received from connections	
										This year 1921	Corresponding year 1920	This year 1921	Corresponding year 1920
Eastern	1921	7,245	2,455	37,691	1,263	3,943	2,289	52,811	72,827	180,524	203,248	187,792	250,231
.....	1920	5,911	2,602	40,109	3,699	6,870	10,921	42,469	90,667	.....	231,363	.....	250,374
Allegheny	1921	3,131	2,695	39,096	2,100	2,223	5,179	40,794	50,122	145,340	185,812	97,744	147,351
.....	1920	2,851	3,018	53,201	8,044	3,296	13,405	35,609	66,388	.....	207,603	.....	150,114
Pocahontas	1921	247	296	16,581	146	979	78	4,867	3,916	27,110	35,968	12,251	19,066
.....	1920	169	205	22,529	1,031	1,846	215	5,016	4,957	.....	37,655	.....	19,840
Southern	1921	3,566	1,835	19,859	320	13,778	230	33,599	30,858	104,045	124,378	59,020	72,103
.....	1920	2,868	2,086	28,641	1,451	18,064	2,810	32,267	36,191	.....	122,388	.....	70,427
Northwestern	1921	18,262	6,495	8,284	497	10,043	18,298	24,716	31,080	117,675	154,138	44,410	57,736
.....	1920	12,351	7,179	9,876	1,598	13,740	44,099	25,002	40,293	.....	160,758	.....	62,455
Central Western	1921	17,252	8,643	16,413	149	5,423	692	27,592	40,650	116,814	117,498	48,776	63,962
.....	1920	10,590	9,726	19,606	400	6,787	3,261	28,882	38,246	.....	123,079	.....	68,672
Southwestern	1921	4,754	2,689	4,125	124	5,756	866	14,137	24,159	56,610	62,373	41,519	48,005
.....	1920	4,257	2,469	5,784	104	7,545	733	17,243	24,238	.....	64,124	.....	50,455
Total all roads	1921	54,457	25,108	142,049	4,599	42,145	27,632	198,516	253,612	748,118	883,415	491,512	658,454
.....	1920	38,997	27,285	179,746	16,327	58,148	75,444	186,488	300,980	.....	946,970	.....	672,337
.....	1919	48,929	34,223	193,564	10,390	62,702	67,790	138,736	390,636	.....	.....	.....	.....
Increase compared 1920	1920	15,460	.....	.....	.....	.....	.....	12,028	.....	.....	.....	.....	.....
Decrease compared 1920	1920	.....	2,177	37,697	11,728	16,003	47,812	.....	47,368	135,297	.....	166,942	.....
Increase compared 1919	1919	5,528	.....	.....	.....	.....	.....	59,780	.....	.....	.....	.....	.....
Decrease compared 1919	1919	.....	9,115	51,515	5,791	20,557	40,158	.....	137,024	198,852	.....	180,825	.....

Labor Board Defines Its Power and Legal Status

Attitude of Various Carriers Causes Tribunal to Defend Its Rulings and Present Position

THE RAILROAD LABOR BOARD, faced with the necessity of justifying its recent orders regarding rules and working conditions and outlining its interpretation of the labor provisions of the Transportation Act, has handed down two decisions which describe at length the views of the Board on the intent of the Act, the authority and jurisdiction delegated to the Board, and the reasons for rendering those decisions which have met with opposition on the part of some carriers, and particularly the Pennsylvania.

The most important of these two decisions grants the petition of the Pennsylvania for further oral hearings in its recent controversy with the Railway Employees' Department of the American Federation of Labor and the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees. The progress of this controversy has been described in the *Railway Age* of July 16 (page 115), August 6 (page 257), August 13 (page 297), August 20 (page 352), August 27 (page 399) and September 10 (page 493). Subsequently the Pennsylvania filed a petition with the Labor Board which, according to the analysis in this decision, attacks the action of the Board in extending indefinitely the national agreements and asks the Board to set aside its decision of July 26, described in the *Railway Age* of August 6 (page 257), and to hold further oral hearings in this controversy. In granting the Pennsylvania's request for further hearings the Board specifically confines the carrier's additional testimony to

1—The question as to what employees, if any, not in the actual and active service of the carrier, such as men laid off, furloughed, or absent upon leave, shall be permitted to vote in the election of representatives to negotiate agreements on rules and working conditions.

2—The question of how the representative capacity of the spokesmen of unorganized employees shall be ascertained.

3—The carrier will be permitted to offer such evidence as it may see fit of the adoption or ratification of its shop craft rules by the representatives of said crafts fairly selected by a majority of the employees of that class.

Testimony on other points raised by the Pennsylvania will not be heard by the Board, according to this decision. The hearings are set for 10 a. m. September 26.

Board Interprets Transportation Act

The Board in this decision recognizes that a clear and detailed statement of its position and interpretation of the labor provisions of the Transportation Act have become necessary and accordingly the decision says in part:

The obvious and declared purpose of Congress in adopting the labor section and title of the Transportation Act was to preserve, protect and promote uninterrupted traffic and transportation, and to avoid any interruption to the operation of any carrier growing out of disputes between the carrier and its employees and subordinate officials. It faced and knew the history of the country; knew such interruptions had repeatedly occurred growing out of such disputes; and it knew that even more general and disastrous interruptions then threatened. It undertook to establish a tribunal or tribunals to settle such disputes, to indicate means and methods of settlement, and, if possible, to prohibit and prevent such interruptions. It created the Labor Board and directed the methods by which such disputes should be settled, and how and when they might be brought before the Board.

After quoting Sections 301 and 307 of the Act, the decision continues:

It is plain that Congress intended to demand and require that if possible there should be no interruption of traffic by reason of these disputes between carriers and their employees; that it should be the positive duty of the parties interested to confer through

their representatives and settle such disputes if possible, but it did not stop there. It directed that if they could not be or *were not* thus settled, then the parties *should refer* them to the proper board for decision. If not thus settled, either because a conference was held and they did not agree or because one of the parties refused to enter such a conference, then either party could bring it before the Labor Board, and it was made the positive duty of this Board to receive for hearings and to decide any such dispute which had not been so decided or settled.

How National Agreements Came Before the Board

The question of national agreements properly comes before the Board, according to this decision, because the requests of the organizations for conferences on rules and working conditions were refused by the carriers on the grounds "that the matter had already been referred to the Labor Board for decision." The organizations subsequently brought this controversy before the Board in accordance with the Board's interpretation of Sections 301 and 307 outlined above. The continuance of national agreements by the terms of Decision No. 2 was purely a "modus vivendi" and, the decision continues:

This decision was accepted, acquiesced in, and acted under, so far as we are informed, by practically all the parties before the Board. The dispute as to the adoption and continuance of the national agreements was before the Board on the applications filed by the representatives of the employees for an adoption or continuation of the national agreements. The Board could not render its final decision for the reasons stated at the time Decision No. 2 was rendered, and, as they were the rules and working conditions then in force, obviously they could not be well terminated without a decision or bringing on an industrial war which Congress had sought to prohibit.

The plea of General W. W. Atterbury, vice-president of the Pennsylvania, for immediate abrogation of national agreements and return to the rules and working conditions of December 31, 1917, made during subsequent hearings on national agreements, was interpreted by the Board as follows:

Here was a clear recognition—if any were needed—that the Board had jurisdiction and was dealing with the subject of rules and working conditions, and the Board was requested by the representatives of the carriers, including the Pennsylvania System, to put in force rules existing prior to December 31, 1917, as a basis for negotiation, from which it appears that the carriers also realized there must be some authorized set of rules in existence and in force to govern the parties until new rules could be adopted, either by agreement or a decision of the Board.

After outlining the provisions of Decision No. 119 which ordered national agreements terminated on July 1, 1921, the decision continues:

The Board was then assuming that *all the parties would in good faith endeavor to meet and confer* as the Board had directed, and as the Transportation Act enacted by Congress required. It assumed that this would be done promptly, and the matters of difference submitted to the Board. The Board retained jurisdiction of the whole matter and proceeded with the hearings, and further evidence and arguments were submitted by all the parties to the dispute.

Board Defends Rulings on Rules

and Working Conditions

Defending the later order continuing national agreements until negotiations between the individual railroads and their own employees were completed and approved by the Board, the decision says:

It was the judgment of the Board that this was proper and necessary, especially in view of the fact that in many instances, on account of disagreement of the parties as to how and with whom such conferences should be held, no such conferences had

been held as the statute required and as the Board had directed. It was thought necessary in the interest of industrial peace that the Board should make this extension and give the parties additional time in which to comply with the orders of the Board and provisions of the statute.

Similarly "Principle 15" regarding the right of the majority of any craft or class of employees to determine what organization shall represent the members of such craft or class (one of the "16 principles" contained in Decision No. 119 and which were to be incorporated into the new agreements regarding rules and working conditions) is defended in the decision as necessary and reasonable.

Pennsylvania Charged With Misrepresentation

The decision then recites the history of the Pennsylvania controversy and in commenting on the request of that carrier for a 15 day extension of time in which to carry out the Board's orders, said:

It appears, however, that the time so granted had not been used for the purpose intended, that the conference directed had not been held, and that no steps had been taken to enable the employees to select their representatives as required by the law and ordered by the Board. On the contrary, the entire 30 days has been consumed by the carrier in the active promulgation of propaganda, at an enormous expense to its stockholders, in which the issues involved in this controversy have been misstated and the action and position of the Labor Board grossly misrepresented.

In the application to the Board to vacate and set aside Decision No. 218, the carrier says, in effect, and in its outside propaganda in express words, that it will not abide by the decision of the Board in this matter, unless said decision sets the seal of its approval on the carrier's conduct.

The open attacks of the carrier on the Labor Board and on the law which created it, shall, in no wise, affect the Board in its effort to give calm and just consideration to the carrier's petition, because matters of great moment to the public and to the carriers are involved.

It may be as well to state in this connection, once for all, that the Labor Board cannot be swerved from what it considers a just and legal course by the hostile printed propaganda of dissatisfied carriers or by the continued threats of labor strikes that are made before it.

In closing this portion of the decision the Board said in part:

The Transportation Act is regarded by thoughtful men as the greatest forward step that has ever been taken in any country to preserve industrial peace. The plain, primary purpose of Congress was to protect the public from the financial disaster, physical suffering and general demoralization that would result from the interruption of railroad traffic and transportation. Secondly, the Act was intended to save both labor and capital from such calamities.

That the time has come when the complex industrial and social system of this great and populous country must be guaranteed all the immunity possible from traffic and transportation disturbances, is beyond all question. If the Transportation Act does not provide such a guaranty, the public will find means, legal and constitutional, that will.

The Labor Board has been gratified by the cooperation it has received, as a rule, from both carriers and employees in its difficult task of aiding the transition of the country's great transportation systems from a war basis to one of peace, with the least possible conflict.

The Board, however, recognizes the right of any party to a controversy before it to take such legal measures as it may deem desirable to protect itself from any injustice that might be imposed by the action of the Board.

Board Discusses Questions Raised by the Pennsylvania

In discussing the points raised by the Pennsylvania in the last hearings in this case several important principles are dealt with by the Board. The following quotations give in substance the Board's views on the questions indicated.

The right of the Board to adopt the principles set out in Decision No. 119 and in other decisions, for the guidance of carriers and employees, is questioned.

It is a settled principle of law that under a remedial act, as this is, even where not expressly given, sufficient powers are implied to enable the purposes of the act to be accomplished. But in this instance the power is expressly given in the language of the statute—namely, "The Labor Board may make regulations

necessary for the efficient execution of the functions vested in it by this title."

In the adoption of the rules promulgated in these several decisions, the Board was making "regulations necessary for the efficient execution of the functions vested in it"—regulations to accomplish the purposes of the Act, to promote and make practicable, if possible, the proper conferences provided for in the Act, and to establish regulations and conditions that would lead to a settlement of disputes and prevent the interruption of traffic.

An attack of criticism is made on the statement in the decision that "there is no question of the closed or open shop involved in this dispute and no other real matter of principle. The question involved is merely one of procedure."

The petitioner loses sight of the fact that the Transportation Act provides that any and all disputes between the carrier and its employees shall be brought before his Board for settlement, unless otherwise adjusted. Questions of procedure are not excluded.

It certainly was a very acute dispute, and the position of the carrier practically was that it had the sole right to proceed in its own way in the selection of the delegates who were to represent the employees; that it, and it alone, had the right to prescribe the plans and conduct the proceedings and be the sole judge of the results; and that any judgment, opinion, direction or regulation by the Board was an uncalled for and unauthorized interference with the prerogatives of the carrier. The mere statement of its position would seem to carry its own answer. It must be evident to every one that if this practice should prevail, there would be no real conferences, no liberty of action left to the employees, and that there could be no real negotiation and settlement of matters in dispute.

The carrier asserts the right to limit the representatives to be selected by the employees to persons who are in the actual employment of the carrier.

The Transportation Act does not prescribe any such limitation. We know of no law in this country which prevents or limits a man in selecting his own representative, and this Board has certainly no power to prescribe a limitation which the law does not, and has no disposition to do so.

The organizations are repeatedly and expressly recognized in the act and shown to have the right to represent the employees in these matters.

Of the hundreds of disputes brought before this Board probably less than five have been brought by and for unorganized employees. It seems useless and even stupid to argue and discuss this phase. But we want to make it plain that Congress contemplated that the organizations would largely represent the employees, and made it the imperative duty of the Board to hear them.

This presents the real crux of the controversy in this case. Here was an organization to which many, if not a majority, of the employees in the shop craft class of this company belonged. It is strongly insisted that a majority of this class on this road desired and had authorized this organization to represent them in the conferences and negotiations to be held. For reasons and motives that are immaterial to this Board, it is evident that the management was not willing, if it could be avoided, that this organization, its officials, agents and committees should represent these men, and it evidently formed its plans to prevent this if it could. Anyway, it was unwilling to agree, or did not agree, with this organization on a plan to fairly ascertain the wishes of this class of employees on the road. Both of the contending parties adopted and carried out their own separate plans, both of which were held by this Board to be faulty and unfair. The Board endeavored to prescribe a plan and method that would fairly obtain and accurately express the wishes of the majority of the employees of this class. This decision the carrier rejects and refuses to abide by, and arrogates to itself the sole function and power to decide these matters. If a majority of this class of employees on this road has an absolute right under the law to select their own representatives—and this is the clearly expressed will of Congress—this Board in its proceedings and decisions must obey the mandate of Congress. If the carrier refuses, it is an attack not so much on this Board as on Congress. It is nothing more or less than a denial and repudiation of the sovereign will of the United States as expressed by Congress.

If the members of any class wish to join a union they have that right. If they desire to remain out or leave such a union at any time, they have that right. If they or a majority of any class want a union or its officers to represent them, they have that right. If they, whether union men or not, want other individuals to represent them, they have that right. Neither this board nor the management of the Pennsylvania System has the right by any kind of plan or movement to dictate as to who shall be their representatives. Any attempt to do so is an unauthorized assumption of power.

The carrier suggests that the employees who are not parties to the alleged contracts and who do not want to be bound by them may invoke the aid of the board.

The carrier in this suggestion ignores the statutory right of the employees in the first instance to a voice in the making of said agreements.

On the question as to the legal right of the carrier to establish rules and working conditions, the board refers to its discussion of this subject as contained in Decision No. 224 (an abstract of which follows). We think that opinion demonstrates that it is the duty of the board to prescribe what are fair, just and reasonable rules and working conditions for the parties without regard to their strict legal rights, and that if each party is allowed to insist upon its strict legal rights, as defined by the decisions of the Supreme Court of the United States prior to the enactment of the Transportation Act, it would be impossible for them to reach agreements, except the agreement to disagree and separate and thus, in effect, demoralize the transportation system of the country.

The purpose of the Transportation Act was to enable the parties to meet in conference, and when unable to compose their differences, for the Labor Board to prescribe conditions under which they should act. It is pointed out in the decision above referred to that there are two possible views as to the present state of the law on this subject: One is that the decisions of this board are merely persuasive with only a moral obligation resting upon the parties. The other is that Congress in the exercise of paramount police power necessary for the preservation, safety, and progress of the country, has, as to these common carriers and their employees, for the benefit of the public, limited the exercise of their hitherto unquestioned legal rights in such matters. But, as stated in that decision, whatever view may be taken, the duty of the Labor Board remains the same; that is, to decide what is just, fair and reasonable as between the parties and the public.

Constitutional Rights of Railroads Analyzed by Board

A second decision rendered in an unimportant case becomes significant because of the discussion of the principles which accompany it. This decision orders the reinstatement of two section foremen discharged by the Butler County Railroad mainly because they belonged to the same union as the men who worked under their direction. The decision also gives the men full pay for all time lost less the amount earned since the date of their dismissal. The company contended that it was within its legal right to discharge these men.

The Board, in this decision said in part:

The principle invoked of the legal rights of the managements in their dealing with employees has cast some confusion and shadow over every action and decision of the board. The board understands that it is its duty to follow the law, and its membership has been sworn to support and maintain the principles of the Constitution of the United States, which obligation the members will faithfully observe.

Congress, when the Transportation Act was passed, was fully informed of the constitutional and legal rights of all the parties and interests to be affected. It must be assumed to have had these rights in mind and legislated accordingly. Among the conditions confronting Congress were these: (1) The great transportation systems of the country being conducted and maintained by many carriers all under private ownership and control; (2) the employment by these carriers of vast numbers of employees more or less especially experienced and trained and fitted for this business, who had generally made this service a life occupation and who were largely dependent on it for their continued existence and welfare. These transportation systems more vitally affected all classes of people and every line of business and endeavor than any other agency of our civilization and life. In fact, the general progress and, indeed, the well-being and almost the existence of most of our people are vitally dependent on the continued and proper functioning of these transportation systems. Anything seriously interrupting or interfering with these systems of transportation and traffic could only and would necessarily result in tremendous financial loss and untold human suffering. Capital, labor, civilization, are dependent on them. The employees in the service of these corporations who, as we say, were largely dependent on them for continuous employment and welfare had, to a great extent, in the protection and upbuilding of their interests, as they had a right to do, joined various unions or organizations, just as the holders and managers of large combinations of capital had done.

These organizations and managerial groups were called upon to deal with each other. From the very nature of things there were conflicts of interests and differing views in regard to the matters of their several interests and rights. Frequent conflicts had in the past arisen, and at the time of the passage of the Transportation Act more serious and general conflicts were threatening, growing to some extent out of post-war conditions. It was

apparent that if these were not prevented the most serious and lamentable results would follow.

It was and is intolerable from a public point of view that strikes or lockouts of any serious character, especially those of a general nature with far-reaching and disastrous effect, should occur. Without regard as to which party is primarily to blame, the effect is the same and the helpless and innocent public is the principal sufferer. These transportation interests from their very nature and from governmental grants acquire great and special privileges and are affected with a public use and owe a public duty. This duty is imposed both on the management and the employees. The public pays the bill and on the public both sides are dependent for their existence. Moved by these conditions and considerations, Congress passed the Transportation Act, created the United States Railroad Labor Board, and prescribed in a general way its functions; the clear purpose being to provide an impartial tribunal, which, looking to justness, equity and fair dealing between the carriers and their employees and the greater and dominating interests of the public, would be able to settle all conflicts and disputes and prevent any interruption of traffic.

The duty is imposed on the Board of deciding disputes as to wages or working conditions on the basis of establishing such as are in the opinion of the Board just and reasonable—not according to the strict legal rights in all instances of either party, for one party might have a legal right to prescribe a wage for which the other party would have a legal right to refuse to work; or, the carrier might have a legal right to impose a rule or working condition under which the employees would have a legal right to decline to serve.

Here the decision outlines in detail the varying views as to the intent of Congress in framing this part of the Transportation Act which are briefly mentioned in the closing paragraphs of the Pennsylvania ruling. Regardless of these views, the duty of the Board remains the same, the decision holds, namely to decide disputes to the best interests of the parties directly interested and of the public. Continuing, the decision says in part:

It must be evident to all and beyond doubt or controversy, from the very nature of things and the character of the disputes that cause the friction between carriers and their employees which lead to interruption of traffic, that Congress did not intend or expect to limit the Labor Board to deciding these disputes according to the strict legal rights of the parties, because if it did, and both parties relied strictly and fully on their legal rights, the disputes never could be solved. If the carrier has, as contended, unlimited freedom in establishing rules and working conditions and is going to do so regardless of this Board's opinion and decision as to what is just and reasonable, there can be no practicable use or sensible reason for the Board hearing the dispute and expressing an opinion or rendering a decision. Likewise, if the employees are going to ignore the Board's opinion and decision and rely on their legal rights to determine for themselves the rules under which they will work, as some of them have been indicating they will do, it is equally useless for the Board to hear and decide the matter. It was doubtless because of a recognition of this conflict in strictly legal rights that Congress, in the interests of the public and to prevent interruption of traffic and the operation of the carriers, created this Board and directed it to decide what, in view of all the facts, was and is just and reasonable in each case.

The Board in its previous decisions has endeavored to be governed by these principles. It has constantly in view the public interest and the rights of the public to demand prompt, efficient, and economical transportation. It recognizes the necessity for discipline and control by management, and it hesitates to interfere by its decision with the management's freedom and discretion in these matters. It has required a clear showing of obvious wrong or a plain violation of contract of employment before granting relief, as its numerous decisions in discipline cases demonstrate. But it must and does recognize that employees have interests that must be given consideration if disturbance is to be avoided and loyal, cheerful, and efficient service obtained.

The individual importance of this particular case is small, but the principle involved is momentous, and the Board has felt that in the public interest its position should be made clear and its views and reasons set out so they could be understood. It has found reasons for this in the very emphatic position taken by the carrier in this case, indicating a purpose to carry out its policy with unlimited freedom, possibly without regard to the decisions of the Board, and recent happenings in other cases where a disregard of the decisions of the Board has been indicated by announcements from both carriers and employees.

It is to be hoped that the effect of this decision will not be misrepresented or misunderstood. Much propaganda has been published and circulated which purposely or ignorantly misrepresent the purpose and effect of the decisions of this Board.

to the effect that the tendency, if not the purpose of its decisions, is to establish a unionized closed shop. Such statements have no foundation in fact. No such proposition has been submitted and no action taken by this Board tending to establish such conditions.

If Congress should enact a law prohibiting recognition of labor organizations of railway employees, or authorizing carriers to establish rules in the interest of the public prohibiting railroad employees from belonging to such unions, this Board would obey the law. But on the contrary, Congress has recognized as lawful and directed this Board to recognize them in the railway service, and this Board in this decision is only obeying the obvious direction of Congress. Its decisions on this subject do not tend to a closed shop and have no bearing whatever on the very bitterly debated question of the open and closed shops in other industries. Any representations or statements to the contrary are not only misleading, but can only work public harm.

This Board can only to the best of its ability decide the disputes brought before it according to the provisions, purposes and spirit of the Transportation Act, seeking to do all it reasonably can to secure industrial peace along these lines and to prevent an interruption of traffic so disastrous to public interests. If either party to such disputes sees proper to disregard its decisions and thus contribute to or cause the public misfortune which Congress sought to prevent, the responsibility is with those guilty of such action.

While the Board regrets such action, not so much because it is an attack more or less direct on the power and effectiveness of the Board, but because it, in the opinion of the Board, is in effect a deliberate attempt to ignore the power and defeat the will and purpose of Congress plainly expressed, and Congress in these matters represents the dignity, power and sovereignty of the United States. The remedy lies with the public, or possibly with Congress or the courts.

Some Remarkable Labor Turn-Over Statistics

By William S. Wollner

ON APRIL 1, 1920, a western railroad inaugurated a plan for collecting statistics reflecting the maintenance of way labor turn-over, and the information thus obtained during the nine months ending December 31, 1920, is of remarkable interest as indicating the extremely short duration of average employment during a period of labor shortage. These statistics cover only men employed through the employment bureau of this road, no data having been collected concerning the men picked up by foremen in the localities in which they were working. As the period which these figures cover was one of extreme labor shortage in the territory this road serves, the number of men employed in this way was very small, it being doubtful if as much as one per cent of the total number of men hired during this period was secured through other means than the employment bureau.

Maintenance forces have been divided, for the purpose of this report, into extra gang laborers, section gang laborers, carpenters and carpenter helpers, and a summary of these statistics as applied to extra gang laborers and section gang laborers is given below.

LABOR TURN-OVER STATISTICS, APRIL 1, 1920, TO DECEMBER 31, 1920 EXTRA GANG LABORERS

Total number employed during period.....	890
Did not report for work or did not work after reporting.....	579
Total number employed during period who gave service.....	311
Total number of man-days service given.....	7,187
Average number of man-days service based on number of men employed.....	8.075
Average number of man-days service based on number of men who actually gave service.....	23.10
DURATION OF STAY BY PERIODS	
Did not work.....	579
1 to 10 days.....	108
11 to 20 days.....	78
21 to 31 days.....	48
1 to 2 months.....	60
2 to 3 months.....	9
Over 3 months.....	8
Total.....	311

Of the men in the above statement, the following were still in the service December 31, 1920:

Less than 1 month service.....	3
1 to 2 months' service.....	7
2 to 3 months' service.....	2
3 to 4 months' service.....	2
4 to 5 months' service.....	4
Total.....	18

SECTION GANG LABORERS

Total number employed during period.....	401
Did not report for work or did not work after reporting.....	247
Total number employed during period who gave service.....	154
Total number of man-days service given.....	4,172
Average number of man-days service based on number of men employed.....	10.40
Average number of man-days service based on number of men who actually gave service.....	27.09

DURATION OF STAY BY PERIODS

1 to 10 days.....	62
11 to 20 days.....	32
21 to 30 days.....	22
1 to 2 months.....	21
2 to 3 months.....	8
3 to 4 months.....	5
Over 4 months.....	4
Total.....	154

Of the men in the above statement, the following were still in service December 31, 1920:

Less than 1 month.....	3
1 to 2 months.....	3
2 to 3 months.....	5
3 to 4 months.....	4
Over 4 months.....	3
Total.....	18

One of the primary purposes of this labor turn-over survey was to determine the principal causes for men leaving the railroad's service so that, if practicable, the conditions responsible for the heavy turn-over could be corrected or modified. Of the 1,513 men hired by the employment bureau during the nine months' period which figures cover, 937 gave no service. Of these 937, 744 did not report on the job and foreman failed to give reasons why 306 of the others quit. It is possible, therefore, to show reasons for only 463 men leaving the service. These reasons as given by the foreman for the classes of employees covered by these statistics (extra gang laborers, section gang laborers, carpenters, carpenter helpers) are tabulated as follows:

REASONS FOR LEAVING

Did not report on job.....	744
Gave no reason.....	306
Wanted to move on.....	182
Discharged.....	73
Weather conditions.....	31
Reduction of forces.....	30
Had another job.....	26
Quarters.....	23
Rate of pay.....	20
Could not mix in gang.....	17
Dissatisfied with food.....	11
Work was too hard.....	8
Sickness.....	7
Had no blankets.....	7
Reduction to working hours.....	6
Had no rainclothes.....	5
Insufficient earnings.....	3
Hours.....	2
Charge for board.....	2
Claimed there was not enough to eat.....	1
Insane.....	1
Poison oak.....	1
Not feeling well.....	1
No mattress.....	1
Sickness in family.....	1
Did not like railroad work.....	1
Had no funds for board at hotel.....	1
Epileptic fits.....	1
Dissatisfied with job.....	1
Total.....	1513

The period which these figures cover was one of acute railroad labor shortage, whereas, the period immediately following has been one in which labor conditions have made available many more men than could be used in railroad maintenance service. Additional statistics will, therefore, be compiled at a later date so that comparison of data for the two periods may be used to reflect turn-over conditions during time of shortage and oversupply, and a consolidation of the data used to reflect average conditions.

OF THE TOTAL RAILWAY MILEAGE in the United States rather over 1 per cent is operated electrically as against about 4 per cent in Britain.—*South African Railways & Harbors Magazine*.

Standards for Railroad Electrification

Power Should Be Developed at 25 Cycles and Use of Both Alternating and Direct Current on Trolley Continued

IN AN EFFORT to establish standards for electric traction equipment, the Electrification of Railways Advisory Committee in England appealed to George Gibbs, chief engineer of electric traction, Long Island, for an expression of opinion. The recommendations by the committee that power should be developed as three-phase alternating-current at the frequency which is in general use in the district and that 1,500 volts direct-current be used as a standard trolley voltage have given rise to much comment. Mr. Gibbs' letter was subsequently published in the *Engineer*, London, substantially as follows:

The Question of System

I am not of opinion that at the present time one system of traction at a suitable pressure should be applied as a standard to meet all requirements of railway traffic. Admitting the advantages of standardization in general, yet I believe the establishment of any one system of electrification as standard for British railways would be a mistake at the present time, because:

(1) It is too early in the state of the art to determine and fix the features of any system to the extent required for the purposes of complete standardization, and yet not restrict the future and desirable development of the system selected.

(2) There does not exist sufficient and comparable operating data from which to conclude as to the relative advantages and disadvantages for the future of the two radically different systems most prominently before the railways today, *i. e.*, the "direct-current" and the "alternating-current." Both systems are workable and in use; each has its advocate in important manufacturing interests, and able professional men differ as to which system should prevail. This competition of diverse minds in the development of these different systems is an important factor in ensuring the future determination of the best system; it should not be discouraged by the premature exclusion of either system from trial in the present development period.

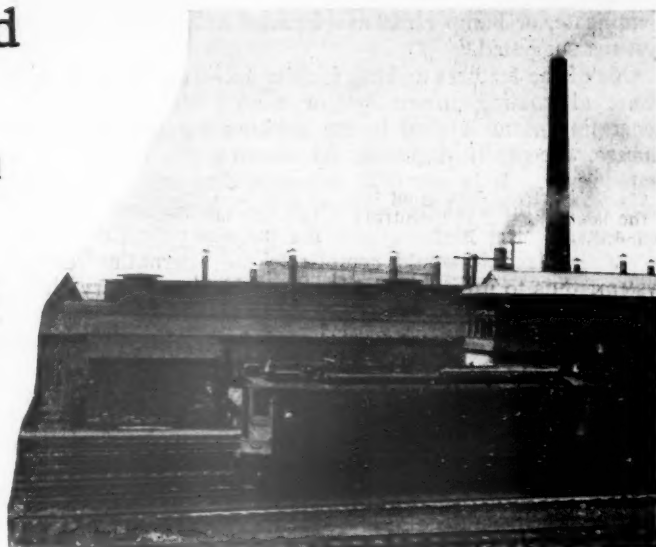
(3) Neither system, as now developed and applied to a typical general case, differs greatly in first operating and up-keep costs; therefore, railways will not be greatly penalized, except by hampering interchange, by being allowed to work out for the time being the full possibilities of the different systems.

Per contra, I am in favor of certain exclusions and the fixing of certain general requirements of any permitted traction system; thus—

(1) I recommend standardizing the location and clearances of third rail and overhead working conductors. Standards for these have been established for American railways by the American Railway Association. The figures will, of course, differ for British railways. Standardization of this kind will permit the continued development of both the alternating-current and direct-current systems of traction and will ensure interchangeability of running requirements between roads using the same character of traction system.

(2) Standardization suitable and safe limits for voltages in each of the two types of working conductors. These should be as follows:

For third rail 600 volts (nominal) direct-current is recommended. A higher voltage than the above is, in my opinion,



inadvisable for general railway usage, because employees or others who have access to the right-of-way cannot be effectively safeguarded from accidental contact with it. Contact with voltages of 1,200 to 1,500 is generally fatal.

The recommended voltage for overhead conductors is 11,000 for the alternating-current system and 3,000 for the direct-current.

In the case of the alternating-current system the maximum is determined by the practical limit in maintaining insulation; 11,000 volts (nominal) is below this point, but experience indicates it is high enough for the heaviest kind of traction and is suitable for any class. A collector system carrying it can be installed and maintained properly and economically within close permanent way and rolling equipment clearances. It should be noted, however, that in an overhead wire system such as the three-phase, which requires two contact wires, insulated from each other and from earth, and two current collectors of different polarity, the practical voltage limit is considerably lower than 11,000.

In case of a direct-current system maximum voltage is limited by other considerations than that of insulation of the working conductor. The demands of economy in distribution and the problem of successful collection of current for heavy trains suggest the highest possible voltage; on the other hand, the limitations in respect of its utilization in the train control and motors point to the desirability of low working voltage. For the general case I am of the opinion that 3,000 volts is the minimum requirement from the standpoint of economy and successful current collection, and is the present maximum allowable for the other considerations.

Frequency

Current frequency should be standardized for traction systems in accordance with the requirements of such purpose and not by a compromise with the conflicting requirements of another service. A frequency of 25 cycles per second is the best for both systems of traction recommended for trial, and should, therefore, be made the standard for traction generating plants.

Power Generation

High-pressure three-phase generation is suitable for both alternating-current and direct-current traction systems, and may be made standard.

The voltage at the generating plant may depend upon the local situation; it is quite immaterial for standardization purposes what this actually is, as the voltage is transformed for secondary distribution, and various primary voltages may be utilized in the traction installation of one railway.

A consideration of "frequency" is highly important and no

standard should be proposed which will exclude, materially complicate, or hamper the development of either of the two systems suggested.

One of the features making for simplification in the single-phase alternating-current system is that current from the generating plant is used in the working conductors without change, except, if desirable, by altering the voltage in a transformer. It is essential, however, that the "frequency" employed in the working conductors shall not exceed 25 cycles per second. If a higher generating frequency than the above is standardized it would complicate the alternating-current system; thus to utilize 50 cycles it would be necessary either to employ "frequency changers" or to install in the central station separate 25-cycle generators for railway purposes. The latter plan is employed to some extent in America, and it is found practicable for electric supply companies to install in the same station high-frequency generators for commercial purposes and 25-cycle generators for railway work and provide one or two large motor units for interchange of power between the two parts of the station.

With the direct-current system which employs alternating-current generation and transformation and conversion in substations any desired frequency from 25 to 50 (or more) cycles may be used. Twenty-five cycles is, however, not only a suitable standard for the direct current, but is from some considerations better than a higher frequency. Therefore:

(1) Three-phase, 25-cycle generation at any desired voltage or voltages should be specified as a requirement to allow the flexible development of electric traction systems.

(2) Commercial power plants, which employ other frequencies, may be utilized for railway power purposes either directly in case of direct-current traction or by the installation of separate generators and motor generator tie-in sets, or frequency changers for alternating-current traction.

Costs

The investigation of the Chicago Association of Commerce is probably the best source of information which has appeared to date regarding the details of first and operating costs of electric systems. This report was completed in 1915. It covers a minute investigation of a great railway problem within a compact area of 428 square miles in and around a very large city. Within this area thirty-nine different railway companies operate dense passenger, freight and switching services over a network of tracks comprising an aggregate mileage of 4,500. The net first cost of the equipment required to operate this entire system electrically was estimated and analyzed with great care for three different systems and gave the following results: Direct current, 600 volts, third rail, \$188,132,314; direct current, 2,400 volts, overhead, \$181,891,122; single-phase alternating current, 11,000 volts, overhead, \$178,127,230. In other words, the first cost was substantially the same for all three systems. This conclusion is, of course, for short-haul conditions; for long-distance haulage the showing for the high-tension system, as compared with the third rail, would be better. For average conditions estimates I have made on important projects indicate a first cost difference of 15 to 20 per cent in favor of the high-tension overhead alternating-current or direct-current trolley systems as compared with the direct-current third rail, and of the two high-tension systems the alternating current appears in every case to cost less than direct current.

As to operating costs, the Chicago report showed for items affected, a substantial saving per train mile as compared with steam. The saving was least in case of the 600-volt third-rail system and greatest for the 11,000-volt alternating-current system, but there was not a very great difference between the latter and the 2,400-volt "overhead" system. The conditions, however, in the Chicago district are somewhat peculiar; for the average railway condition, estimates indicate differences of 10 to 16 per cent in favor of the high-tension trolley systems as compared with the 600-volt direct-current third

rail and the high-tension alternating current appears to be more economical than the high-tension direct current.

Factors Affecting the Selection of a System

The important considerations governing the selection of a system are:

- (1) Adaptability to all physical conditions of the railways.
- (2) Economy in first and operating costs.
- (3) Flexibility as regards conducting varying kinds and volumes of traffic.
- (4) Suitability for extension.
- (5) Possibilities as regards future advance in the art and improvements in details.

I would work, as far as consistent with the above, towards the elimination of systems which are applicable to special cases only. This, as before indicated, would narrow the selection to the adoption of one of the high-tension overhead conductor systems. The 600-volt third-rail direct-current system would only be considered for extensions to existing installations or for very special cases.

The 1,500-volt direct-current system could only be adopted with an overhead conductor and for light traffic requirements; 1,500-volt third rail cannot be used generally because of its danger to life. The 1,500-volt system is an interim development only. Higher voltage direct-current systems, such as the 3,000-volt system, have promise for the future and their development should be allowed to continue unhampered. The 11,000-volt alternating-current system likewise has a broad field of usefulness and promises well for future development.

The selection, therefore, of a proper system for general use appears to lie between the 3,000-volt direct current and the 11,000-volt alternating current. I have referred to the existing difference of opinion as to these two systems, and since I am not recommending the elimination of either from adoption at present, it is unnecessary for me to indicate my preference. I should approach any concrete problem upon its merits along the lines laid down, having regard to the latest experience and facts as to the state of the art when decision is to be made.

Report of French Commission Not Well Founded

I have looked through the voluminous report of the French Commission on Electric Traction, and, frankly, its conclusions do not seem to be well founded on the data presented. Perhaps the commission has arrived at a correct conclusion, having regard to the particular conditions in France, but the reasons given for condemning the single-phase system seem inadequate and largely the results of a "scare" as regards the inductive interference question. The commission seems to have been dominated by telephone and telegraph experts. It also seems to have been greatly influenced by reports of the high cost of maintenance of the alternating current, which, they state, is at least double that of direct current, a conclusion which is absurd. No effort seems to have been made to equate operating conditions in comparing systems, and I doubt if the commission really had any accurate figures of cost of maintenance of the alternating current. It does not seem to have attached much importance to the future trend of development and possibilities in connection with both alternating-current and direct-current traction.

I was interested, and disappointed, in reading the Interim Report of the Advisory Committee on Electrification of Railways. It would be valuable to know what reasons led the committee to the adoption of the 1,500-volt direct current as standard. I think a mistake has been made, even if it should prove to be the eventual system, because the adoption of any standard now is going to put the development of electric traction in a straight jacket. The development of both the alternating-current and the direct-current systems should continue in order to get the best results.

Telegraph and Telephone Section Hold Annual Meeting

Radio and Wired Wireless in Railroad Work, Message Traffic and Technical Training Discussed

THE ADAPTABILITY and the application of radio and wired wireless to railroad work, the reasons why employees of the telegraph and telephone department should be technically trained and the use of automatic telephone systems for intercommunication between the various offices of a railroad were among the important subjects considered at the annual meeting of the Telegraph and Telephone Section, Division I—Operating, American Railway Association, which was held at the Hotel Cleveland, Cleveland, Ohio, on September 21, 22 and 23. Chairman H. Hulatt (Grand Trunk), presided. There was a total attendance of about 275. This meeting is the first held since the annual meeting at Winnipeg, Man., last September, as the March meeting which was scheduled for Atlanta, Ga., was cancelled, in line with the wishes of the A. R. A., because of business conditions existing at that time.

Of the 13 regular committees, 11 submitted reports. In addition a paper was read on "Some Phases of Railroad Telegraph and Telephone Engineering" by Stanley Rhoads, telegraph and telephone engineer, New York Central Lines, which was discussed by A. W. Douglas (C. R. I. & P.), I. C. Forshee (P. R. R.) and J. L. Niesse (C. C. C. & St. L.). At the opening session on Wednesday, September 21, Dr. Dayton C. Miller, professor of physics, Case School of Applied Science, delivered an address on "Electric Wave Motions and Applied Scientific Phenomena" in which he discussed many scientific principles affecting the development of the telegraph and telephone.

After the opening of the first session on Wednesday morning the members were welcomed on behalf of the city by Mr. Metcalf, director of finances. A letter was then read from R. N. Aishton, president of the American Railway Association, in which he called attention to the many advances made in the methods of communication during the last few years, while Mr. Hulatt, in his opening address, emphasized the important educational advantages to be derived from taking part in the activities of the association. At the opening of the afternoon session on Wednesday, J. Marshall, special representative of the Freight Claim Division of the A. R. A., talked on freight claim prevention.

Thomas A. Edison personally sent a message of greeting over a special wire from his laboratory in Orange, N. J., to the members of the section during the informal banquet held on Thursday evening in which he said, "It is with great pleasure and some pride that I am still able to send readable Morse, that I extend my kindest felicitations and congratulate you upon the able manner in which you are carrying on the work begun by the railway telegraph superintendents in 1882. This occasion brings back to me pleasant recollections of the old days when I was a regular and probably a better operator. I hope some of my comrades are there to-night. To all I extend my '73'." The message was answered by Charles A. Seldon, general inspector of transportation, Baltimore & Ohio.

Radio and Wired Wireless

J. D. Jones (P. R. R.), chairman of Committee No. 12—Radio and Wired Wireless, in presenting the report, explained that the committee had been asked to keep in touch with various manufacturers of wireless apparatus with a view to considering the adaptability to railroad use of any new developments in the field of wireless telegraphy, wireless telephony and wired wireless and to negotiate with one

or more manufacturers of wireless equipment to arrange for the development and practical demonstration of radio (telegraph and telephone) and wired wireless equipment to meet various railroad conditions. In connection with this work, data were obtained from the various railroads as to what has been done regarding the application of radio and the possibilities of its use in railroad work. In this connection C. A. Worst, superintendent telegraph, C. B. & Q. suggested that the following points be considered in the application of radio in any form for practical use in railroad service.

- (a) Necessity and advantages as a reserve means of communication.
- (b) Necessity and advantages as a regular means of communication.
- (c) Cost of original installation per station.
- (d) Number of stations to be installed.
- (e) Cost per station for operation.

E. C. Keenan, general superintendent telegraph, New York Central Lines, in speaking of wired wireless stated that "apparently there is no question that this method of obtaining multiple communication will be available within a short time, and will give additional trunk line connections between switchboards and adjacent cities, so that almost unlimited communication can be given to the railroad officers and subordinates, which will do away with some of the restrictions now imposed. If these carrier circuits can be obtained at reasonable expense, it would seem to be our aim to establish sufficient long distance communication by applying them to our present lines so that prompt connection can be given upon any legitimate request for service." Mr. Keenan also thought that there was a need for wireless on the Great Lakes for railroads which maintain their own boat lines and that wireless telephony could be used to advantage if satisfactory communication could be maintained continuously between some central stations and various tug boats operated by the railroads.

It was the feeling of H. A. Shepard, superintendent of telegraph, N. Y., N. H. & H., that the radio telephone could undoubtedly be used to advantage between the engine and caboose in freight service provided that a suitable signaling system is devised to enable one station to signal the other when desiring to talk.

J. A. Jones, superintendent of telegraph, Southern Railway, Lines East, is of the opinion that there is a good field for radio in railroad service and he is looking forward to the day when every train will be an open office. This would be of particular advantage when the high officers of a railway, when en route on the line, could get in communication directly with their subordinates.

Regarding the application of small portable wireless sets for the use of maintenance of way forces or wrecking crews in communicating with the division headquarters, the committee stated that this had been carefully considered and, after a conference with engineers of radio companies, it was learned that portable sets were available but that the complete equipment so far constructed, because of its weight, would require several men to handle. It was the feeling that small outfits capable of being handled by one man would not be available for some time, but that portable outfits now constructed could be placed on hand cars or wreck trains and would enable the working parties to keep in communication with headquarters.

In connection with this entire subject the committee also presented (1) Information as to the meaning of the terms, "Radio and Wired Wireless," as applied to railroad operation; (2) Suggestions as to what particular conditions in

railroad operation would justify consideration of the application of radio and wired wireless; (3) Information on the application of wireless telephone for short haul transmission, as for example—between important division points; and (4) Information on the application of wireless telephone for operation in conjunction with physical lines, to take care of transmission by wireless through certain sections, to be continued over physical lines to regular telephone stations.

Report on Message Traffic

This committee of which G. D. Hood, superintendent of telegraph, C. R. I. & P., is chairman, recommended the use of an automatic telephone system for intercommunication between various departments of a railroad, leaving the ordinary switchboard free to handle public requirements, whenever and wherever the business on the ordinary switchboard reached the point where release is necessary. Such an automatic system should have the greatest possible flexibility and should be practically unlimited as to growth and length of circuits. For intercommunication between offices located in the main building where such stations will not be subject to any material changes of location, if it can be foreseen that the ultimate requirements will not exceed 20 stations, an intercommunicating telephone system of the push button or cam-key type should be considered.

In considering the desirability of tie lines between the switchboards of the different railroads in cities where there are headquarters of several railroads, it was felt that their use would eliminate the necessity of communication going through the different telephone exchanges and would expedite service. In cities having a number of railroad private telephone exchanges it was recommended that circuits connecting such private exchanges are desirable whenever and wherever a traffic study justifies their installation, as the use of such circuits will facilitate communication between railroads by expediting telephone service and improving transmission.

In addition to the subjects above mentioned this committee presented information on the use of rotary repeaters; standardization of operators' employment records; necessity for transmitting initials of railroads after signatures; use of printer telegraph apparatus; use of carrier system for distribution of messages; uniform rules governing employees; recommendations in connection with the organization of a proper method of educating wire chiefs, repeater attendants and operators and the desirability of a standard code covering the routine matters exchanged on a railroad and more particularly in connection with such matters exchanged between different railroads transmitted over commercial wires, such as reservation messages.

Report of Committee on Technical Training

This committee, of which I. C. Forshee, electrical engineer, telegraph department, Pennsylvania System, is chairman, stated in its report that it was the consensus of opinion of this committee that the courses of instruction to be recommended or developed by the committee should be available for all employees under the superintendent of telegraph from the messengers, groundmen, linemen or laborers who first enter the employ of the company to the highest employee in the department. The methods of instruction which are applicable to the work of this department are: In a class room, under a competent instructor; by an instructor or foreman who can assemble the employees on the job; by lectures; and by correspondence.

For each road to attempt properly to equip school or class rooms for the instruction of employees would result in a needless duplication of facilities and expense in a large number of important railroad centers. In such cities better and more complete facilities and more competent instructors could be obtained by pooling the interests. With this ar-

range the employees of each road and each class of employees could be given regular class room assignments; instructors who are specialists in each particular class of work could be employed; more complete and adequate equipment and material could be furnished, and all at a smaller expense to each road than to attempt to equip and man even the most elementary layout by each company. The expense of equipping and running such a school could be pro-rated upon some equitable basis.

In order to ascertain to what extent the different railroads have developed educational work for the telegraph and telephone department, a questionnaire was prepared by this committee and sent out to the superintendents of telegraph of all railroads holding full membership in the A. R. A. Sixteen companies with a mileage of 41,802 at present have courses of instruction, while 78 roads are in favor of a course in technical training and four are not in favor of such a course. Sixty-three favored an apprenticeship course, while 11 roads were opposed to this practice.

Construction and Maintenance—Outside Plant

Committee No. 1—G. A. Cellar, general superintendent of telegraph, Pennsylvania system, chairman, has perfected its rules for the construction of pole lines, the tables indicating classes and spaces of poles, and specified its methods of calculations, assumed stresses to which the line shall be opposed and the strength recommended to approve these stresses. The appendices submitted with its report covered: (1) method of calculating the class and number of wood poles required for railroad telegraph and telephone pole lines; (2) tables of minimum dimensions and classes of poles; (3) modulus of rupture of various species of wood used for telegraph and telephone poles; (4) method of calculating strength of side guys and (5) method of calculating the replacement tables.

It also presented specifications for telegraph, telephone and other signal wires, and cables, crossing the tracks of steam and electrified railroads. It has given attention to crossing legislation and commission orders passed or issued in various states where progress is being made in the establishment of proposed standards covering this class of work. The committee resubmitted practically the same specifications for transpositions as were given at the last meeting at Winnipeg to which very slight additions have since been made.

Construction and Maintenance—Inside Plants

R. F. Finley, superintendent of telegraph, New York Central, Lines West, chairman of this committee, stated that the specifications for the installation of telegraph and telephone equipment in railroad offices, as recommended by the committee at the Winnipeg meeting in 1920 for submission to letter ballot for inclusion in the manual, covered quite generally fundamental principles only and that the work of the committee from now on will be devoted largely to the preparation of separate specifications for the manufacture, installation and operation, etc., of telegraph and telephone inside plants.

A specification for lead sheath insulated and enameled, non-quodded office cable for No. 18 A. W. G. conductors and a specification for braid sheath rubber insulated non-quodded office cable for No. 16 A. W. G. conductors were presented. A report was also made on the preparation of typical floor and wall plans showing the space necessary for and the most desirable arrangement of telegraph and telephone equipment in railroad station towers, booths and office buildings. These plans include sizes and locations of operating tables at smaller offices where only single Morse and train order telephone instruments are used, together with layouts of instruments and signal apparatus in such offices. Drawings for all circuits required in railroad telegraph and telephone inside plant and specifications for the installation and maintenance of gravity batteries; of caustic

soda batteries and for cross connection records were also presented.

Other Committee Reports

Committee No. 3—Protection Against Electrolysis, B. J. Schwendt, superintendent of telegraph and signals, Toledo & Ohio Central, chairman, reported on the extent to which it has been found that ordinary maintenance forces are able to detect and record electrolytic action intelligently. The committee also submitted a brief outline of the work done by other bodies on the subject of protection against electrolysis.

Committee No. 4—Protection against Lightning for Electric Light and Power Circuits, J. F. Caskey, superintendent of telegraph, Lehigh Valley, chairman, presented reports on the comments and suggestions received from representatives of members; carried to a conclusion manufacturing specifications previously submitted; submitted specifications for telegraph and telephone protector mounting, and for telegraph and telephone protectors assembled and also instructions for the installation and maintenance of telegraph and telephone protectors.

The officers of the section chosen for the ensuing year are as follows: Chairman, W. H. Hall (M. K. & T.); first vice-chairman, R. F. Finley (N. Y. C.); second vice-chairman, I. C. Forshee (P. R. R.).

Increasing the Efficiency of Employees

By Paul H. Pearson

SINCE THE RETURN of the railroads to private management, every possible effort has been directed toward increasing their capacity through rehabilitation of equipment, increasing loads per car and miles per car per day, and last but not least, increasing the efficiency of the employees. Of these several methods, the increased efficiency of labor has been developed to the smallest degree, notwithstanding the fact that it possesses the greatest of possibilities with the smallest expenditure of capital of any of the factors mentioned; and this at a time when capital is hard to get, expensive because of the high rate of interest, and in some instances actually impossible to obtain at all.

It must be admitted that in the now quite distant past, capital had the upper hand, and used it without a great deal of regard for the rights of labor; in the last few years the tables have been turned and labor now has the balance of power; it, too, has used it in many cases without regard to either the rights of the carriers or the public. It is not my intention to enter into a discussion of the merits or demerits of either capital or labor's use of their respective advantages, but it is unthinkable that this condition should ever again be allowed to exist. On the other hand, both labor and capital should get down to a business-like basis and work together for the best interests of each other.

My position is not sufficiently official to remove me from the confidences of those employees with whom I have summered and wintered—been cold and wet, as well as dry and warm—and with whom I have often shared food and "smokes" while we were all growing up together in the business of transportation. At the same time my relation to my superiors has come to be sufficiently close to give me an insight into the problems and perplexities surrounding those responsible for the efficient operation of the transportation machine of which I am a part.

Owing to the very nature of their work, the various classes of train service employees must of necessity constitute the chief problem, because no method of supervision has yet been devised which gives more than a superficial check on the work performed by these men. They are out at all hours of the day and night many miles from the nearest superior officer, with problems arising at a moment's notice the suc-

cessful solving of which is dependent upon their own individual experience, judgment and faithfulness, as well as the degree of co-operation existing between the individuals.

From the constant daily contact with the various train service classes, I am firmly convinced that fully 80 per cent of the normal number of such employees possess both the will and the ability, intelligently directed, to give the very best work they have in them; that the efforts of executive officers responsible for the efficient operation of the transportation machine should be directed toward a better understanding of the problems confronting both the officers and the men. Instead of a very unwise attempt to break down labor organizations, which have come to stay, every effort should be made to have the better class of men, numbering, as before stated, about 80 per cent, become the predominating influence in such organizations.

As a first step towards this end, I believe that much information now in the possession of supervisory officers, and heretofore considered as confidential, could be disseminated among the men with good results. It would give them an insight into the reasons underlying certain policies of the management, and contribute toward the more intelligent performance of their duties.

As a second step, some method should be followed of keeping an accurate record of the many good performances recorded weekly or monthly, and suitable publicity given them by the publishing and distribution of a bulletin or news letter at stated periods. This bulletin should cover only such territory as may come under the jurisdiction of one superintendent in order to keep up the local interest of the men who are working side by side daily. It would, of course, be advisable also to record the poorer performances, being careful to omit the names of the offenders.

A great deal of unrest and dissatisfaction is often caused by employees being acquainted with facts pertaining to the operation of their own division, without knowing the underlying reasons therefor. Much of this could be corrected by the inclusion in the bulletin of such of these facts as can be disseminated without injury to the management.

What is true of the train service men is also true of all the other branches of the service, as all have a great interest in the operation of the road, and only need to have this interest stimulated to begin to show good results. I know that a great many executive officers will doubtless discount this statement by about 50 per cent; if so it will be because the facts are hidden under the mass of troubles caused by the other 20 per cent of the employees, thus leaving little time for attention to those faithful employees who by the very nature of their good work go unnoticed.

There can be no question, in the mind of any thinking person, but that the national agreements lead to great inefficiency and unnecessary expense. Each road should deal directly with its own employees, whose problems they are familiar with, and the conditions surrounding which are so dissimilar even on adjacent roads. On the other hand, there is still present in the minds of even the more conservative of the labor men a very considerable doubt as to the real intentions of the officers of the different carriers, and it is the big job of such officers to so establish their own sense of justice and integrity, that they will have the absolute confidence of such employees. This cannot be done without some means of bringing both sides together into a knowledge of the problems of each and how it is proposed to meet them; or, in other words, bringing each other's troubles out into the sunlight; this can also be partially accomplished by some such publication as I have suggested.

Finally, it is my opinion that the desired results can only be obtained by much careful thought and hard work on the part of the best brains our railroad executives can produce. There will be many discouragements, but I have an abiding faith that the problem is possible of a solution.

General News Department

The Railroad Administration will settle immediately the claims for damages sustained by 278 residents of Cloquet, Minn., in the forest fire of October 12, 1918, at 50 cents on the dollar.

A new organization known as the Rock Island Ampere Club has been organized recently, the membership including managers, wire chiefs, operators and linemen at all of the relay telegraph offices.

A lone masked bandit, who held up a Chicago, Burlington & Quincy train at Parkville, Mo., about 15 miles from Kansas City, Mo., on the night of September 10, was overpowered and captured by passengers and members of the train crew while in the smoking car.

A party of officers of the St. Louis-San Francisco, including T. A. Hamilton, vice-president, and F. G. Jonah, chief engineer, last week went over the line of the Missouri & North Arkansas, which has discontinued operation. The Frisco crosses the abandoned line at Seligman, Mo.

The official opening of the Cairo, Ill., floating dock connection of the Mississippi River barge service with the Illinois Central took place on September 16, when a special train carrying members of the Chicago Association of Commerce arrived. The canal fleet now consists of 40 steel barges and four towboats, each with a carrying capacity of 2,000 tons.

Torpedoes which appeal to three senses, hearing, seeing and smelling, are now in use on all of the lines of the Canadian Pacific. The new torpedo, according to an announcement by the company, has spring steel or brass clips by which it is fastened to the head of the rail. Each detonation is accompanied by a brilliant flash and a pungent smell. This torpedo is called the "Meteor Track Signal," Wanklyn patent. It is made by the Dominion Cartridge Company.

A Statistical Analyst, at a salary of \$3,600 to \$5,000, is wanted by the Interstate Commerce Commission, according to the last announcement of the United States Civil Service Commission. Applications may be filed up to November 1. Appointees will be required to assist in the analysis of railroad reports and must be capable of conducting independent research and analysis of statistical data pertaining to the economics of transportation and of making reliable and readable reports thereof. Other requisites can be learned by applying for Form 2118, giving the title of the examination desired.

Veteran Employees' Associations are being organized on all divisions of the Pennsylvania Railroad, which have not already organized, and campaigns are going on to increase the membership of those associations already in existence. As soon as the divisional organizations are perfected it is planned to hold a Pennsylvania System convention. Approximately 38,778 employees are eligible for membership in these associations by virtue of 20 years of service; that is, one employee in five. Many of the 6,185 former employees now on the pension roll are members of the division veterans' associations. These associations were first started in 1897, and they have been among the active factors in perpetuating those traditions and ideals of public service and mutual co-operation between officers and men which have been handed down through 75 years of Pennsylvania Railroad history.

Traveling Passenger Agents

The American Association of Traveling Passenger Agents held its annual convention at Salt Lake City, Utah, on September 15. F. R. Perry, general agent of the passenger department of the Canadian Pacific, New York City, was elected president.

Signal Section

F. B. Wiegand, chairman, and H. S. Balliet, secretary, announce that the meeting of the Signal Section of the American Railway Association, which was to have been held in New York City on November 3 and 4, has been cancelled. The majority of the committees have not progressed to the point where they can report conclusively on the subjects assigned to them.

Inconvenience of Eight Hour Day

Claiming that inconvenience and hardships are caused to patrons of the railroads in Louisiana, under a strict application of the Public Service Commission's rule prescribing an eight-hour day at stations, the railroads in that state have asked the commission to amend the rule in order to permit a split of the time a ticket agent works. Under the rule at present the agent works eight hours straight regardless of the time of the arrival of trains. Under the ruling asked for, the railroad may arrange for a ticket agent to divide his time so as to be on duty at the time of all passenger trains.

Transmission of Electric Power at 1,000,000 Volts

Experiments in the transmission of electrical energy at a potential of 1,000,000 volts were made recently in a laboratory of the General Electric Company at Pittsfield, Mass. The result of the tests indicated that a line in which the conductors are 4 in. in diameter, or larger, would be necessary for the transmission of 1,000,000 volts, but also confirmed the belief of the engineers that it will be commercially feasible to employ higher voltages than any now in use. A power line is now under construction on the Pacific Coast, over which energy will be transmitted at 220,000 volts.

Reduction in Employees and Their Compensation

A further reduction in the number of employees and the total payroll of the railroads for the second quarter of 1921, as compared with the first quarter, is shown in the Interstate Commerce Commission's quarterly summary of statistics on employees' service and compensation for Class I roads for the three months ending June 30. The average number of employees for the quarter was 1,568,143 as compared with 1,691,471 in the first quarter of 1921. In the third quarter of 1920, when the number of employees was at the maximum, the total was 2,157,989. The number in service at the middle of the month was 1,542,716 for April, but increased to 1,575,599 for May and 1,568,143 for June. The number in service in April was 655,108 less than it was last August.

The total compensation for the second quarter of 1921 was \$699,684,795 as compared with \$757,325,356 in the first quarter of 1921 and \$1,052,109,451 in the third quarter of 1920. The total payroll for the 12 months ending June 30, 1921, was \$3,491,000,000.

Steel Treaters Convene at Indianapolis

The third annual convention of the American Society for Steel Treating was held in the Manufacturers' and Women's Buildings, State Fair Grounds, Indianapolis, Ind., September 19 to 24 inclusive. Prominent metallurgists and steel experts, both of this country and Europe were present. Eighty-seven papers relating to steel treating in its various phases were read and presented by title, simultaneous sessions being held on several afternoons to allow time for reading and discussing the large number of papers. The exhibition was of exceptional size, interest and value, approximately 80 manufacturers exhibiting products ranging from immense electric and gas furnaces to small scleroscopes and high-speed drills. The entertainment program was featured by a 100-mile match

race Wednesday morning on the Motor Speedway between Duesenberg and Frontenac motor cars. Other interesting features were a smoker and vaudeville entertainment Tuesday night and the annual banquet Thursday night at the Claypool hotel.

C. M. & St. P. Officers to Test Election Laws

Test of the law which requires that employees be allowed two hours with pay in which to cast their votes at primaries and elections in Chicago will be made by the officers of the Chicago, Milwaukee & St. Paul, for whom warrants charging violation of election laws were issued on September 19. These warrants were issued on complaint of an assistant states attorney and named H. E. Byram, president of the St. Paul, Burton Hanson, general counsel, L. K. Silcox, general superintendent of motive power, and George T. Martin, assistant to Mr. Silcox. It is charged that at the time of the judicial election last June a machinist employed by the St. Paul asked for two hours off in which to vote. His request was not answered. Nevertheless he was absent for two hours and found the following day that two hours' pay had been deducted from his wages. The warrants were issued as a result and attorneys for the railroad announced that they intended to test the constitutionality of the law, carrying the case to the highest court if necessary.

Mr. Byram, in statements made to the press, takes the stand that under the eight-hour day, the men have opportunity to vote outside of working hours and the carrier should not be forced to pay for two hours lay-off every election day.

Large Loss from Claims on Household Goods

The Freight Claim division of the American Railway Association has found that the railroads pay \$1,500,000 yearly on household goods, of which amount 83 per cent is for damages and 17 per cent for shortages. Recent statistics show that the railroads pay about 85 cents in claims for every ton of household goods shipped, while claims do not exceed 5 cents a ton on all other classes of freight.

The Freight Claim division has issued a circular to division superintendents requesting them to bring the matter before their district freight claim prevention meetings for discussion. Among the suggestions proposed are those that freight agents be required to see that all household goods are properly marked, securely packed and stowed to ride safely; that the shipper declares the valuation in a signed statement; that the shipper number each piece consecutively and place a slip of identification in each box. Agents should weigh damaged pieces in order to help the claim department determine the value under the tariff. One railroad has issued a pamphlet for the benefit of storage companies, individual shippers and others, stating its requirements when accepting responsibility for shipments.

Federated Shop Crafts Announce Strike Vote

Railroad shop employees, members of the Federated Shop Crafts, have decided, by a "constitutional majority," to strike in protest against the recent wage reduction authorized by the Railroad Labor Board, according to the announcement made by B. M. Jewell, president of the Railway Employees' Department of the American Federation of Labor, at a mass meeting of shop employees at Chicago on September 18. Mr. Jewell stated that no strike had been called because the organization leaders believed that their cause will be considerably strengthened if the contemplated strike is called in protest against changes both in the wage scale and in the rules and working conditions.

General charges that the railroads were opposing the demands of the organizations as part of the movement which Mr. Jewell said was backed by "nine billion dollars or more" were made. The object, he said, was "to crush organized labor." In support of this charge he cited the "unfair action of the railroads in offering to negotiate working rules on each road and then failing to agree."

N. P. Good, chairman of the Pennsylvania System Federation No. 90, expressed his opinion that the Pennsylvania had been selected by the railroads to conduct a fight for the "open shop" as the first step in a campaign which would eventually involve all the railroads. Practically all of the speakers at the meeting condemned the Railroad Labor Board and its decisions, Mr. Jewell charging that the railroads were attempting to use the board to take unfair advantage of the present industrial situation.

Iowa Increases Railroad Taxes

Railroad companies operating in the state of Iowa have been taxed, they believe, too high and not according to the basis set down for other properties. The roads have, therefore, brought injunction suits against the State Executive Council and 99 county auditors to restrain the spreading of the tax assessment on the valuation as laid down. The suits began in the federal court of the state on September 12 with H. L. Adams, counsel for the Chicago & North Western, J. L. Parish, for the Chicago, Burlington & Quincy, and J. E. Gamble, for the Chicago, Rock Island & Pacific, presenting the railroad side of the case. During the opening day of the hearing the railroads charged that they are being assessed for taxation in Iowa at 79 to 84 per cent of their actual value, while Iowa farms are only taxed upon the basis of 38 per cent.

The assessed tax valuation of the railroads operating in the state for 1921 has been materially increased over that for 1920. Thus the Chicago, Burlington & Quincy, which was taxed on an assessed valuation of \$11,607,617, or \$8,500 per mile of road, in 1920, has been given an assessed valuation of \$10,500 per mile, or \$14,333,160, for 1921. The Burlington claims that its assessed valuation should be \$3,220 per mile and at that figure the road's taxes for this year would be \$777,000 less. The Chicago & North Western has 1,615.71 miles of tracks in the state and was assessed in 1920 at \$9,700 per mile, which figure has been increased in 1921 to \$10,500 per mile, or a total of \$16,964,955.

The Chicago, Rock Island & Pacific, with 2,202.35 miles of track in the state, was assessed at \$7,750 per mile in 1920 and \$8,000 per mile in 1921, or a total of \$17,618,680 for the latter year.

Unemployment Conference at Washington

Secretary Hoover, of the Department of Commerce, has announced the names of those invited by the President to attend a conference at Washington, beginning on September 26, called by the President to inquire into the volume and distribution of unemployment, and to consider measures that would tend to recovery of business. Men of experience in those industries where there is the largest degree of unemployment have been called upon in larger proportion than from trades where there is less difficulty. It was impossible to include representation of the whole of some 50 trade groups in the conference and hold its size within workable limits.

An Economic Advisory Committee has been appointed in advance of the conference by enlarging the economic advisory committee of the Department of Commerce. This committee will prepare an agenda for the conference. Mr. Hoover has been appointed chairman of the conference and it is expected that it will at once dissolve into special committees which will, no doubt, seek co-operation from further representatives of labor, employers, and civic bodies. Secretary of Labor Davis has made a renewed survey of unemployment in preparation for the conference.

The members invited include:

C. H. Markham, president of the Illinois Central; W. S. Carter, president of the Brotherhood of Locomotive Firemen and Enginemen; Edgar E. Clark, ex-president Order of Railway Conductors; member Roosevelt Anthracite Commission in 1902; formerly chairman Interstate Commerce Commission; and Charles P. Neill, former U. S. Commissioner of Labor Statistics; umpire Anthracite Conciliation Board; manager Southeastern Railways Association.

Operating Statistics of Large Steam Roads—Selected Items for the Month of July, 1921,

FREIGHT SERVICE														
Region, road and year		Average miles of road operated	Train-miles	Locomotive-miles		Car-miles		Ton-miles (thousands)			Locomotives on line daily			
				Principal and helper	Light	Loaded (thousands)	Per cent loaded	Gross. Excluding locomotive and tender	Net. Revenue and non-revenue	Servicable	Un-servicable	Per cent unservicable	Stored	
New England Region:														
Boston & Albany.....		1921	394	238,548	257,204	28,825	4,268	63.4	227,907	88,303	120	29	19.2	...
		1920	394	340,373	365,183	38,561	6,046	66.7	353,440	168,984	134	31	18.7	...
Boston & Maine.....		1921	2,469	501,041	554,038	47,562	10,413	67.7	543,685	221,613	343	115	25.1	63
		1920	2,469	783,167	874,650	94,110	15,589	71.4	848,521	383,559	367	101	21.6	1
N. Y., N. H. & H.....		1921	1,959	455,987	495,440	32,299	10,340	65.3	546,425	225,718	301	80	21.0	38
		1920	1,938	543,143	567,832	36,546	11,577	71.1	614,180	282,889	308	108	26.0	...
Great Lakes Region:														
Delaware & Hudson.....		1921	880	338,651	441,012	31,292	8,198	60.9	546,714	267,406	269	44	14.1	114
		1920	858	456,517	650,645	44,735	11,757	66.9	792,322	422,526	266	34	11.3	11
Del., Lack. & Western.....		1921	997	485,022	587,595	110,734	14,683	67.5	822,777	383,357	307	53	14.7	47
		1920	997	576,126	703,718	132,474	17,386	69.6	1,019,268	520,898	307	73	19.3	1
Erie (inc. Chic. & Erie).....		1921	2,259	873,116	981,640	46,710	28,202	66.0	1,687,295	771,155	522	177	25.3	96
		1920	2,259	1,140,806	1,279,814	38,691	37,536	68.1	2,315,723	1,145,517	562	124	18.1	3
Lehigh Valley.....		1921	1,431	527,360	583,615	58,303	14,918	62.3	915,825	421,736	416	127	23.4	131
		1920	1,429	669,055	745,433	68,049	20,086	70.3	1,252,860	670,220	426	169	28.4	95
Michigan Central.....		1921	1,829	424,997	435,511	16,762	12,712	62.4	702,150	263,680	331	81	19.7	115
		1920	1,826	563,608	608,544	18,637	18,969	72.0	1,007,829	481,671	339	75	18.1	...
New York Central.....		1921	5,655	1,542,563	1,706,487	118,905	52,688	62.5	3,061,207	1,290,314	1,001	641	39.0	279
		1920	5,646	2,079,143	2,379,522	184,197	79,703	65.5	4,887,140	2,407,894	(1)	(1)	(1)	(1)
N. Y., Chic. & St. L.....		1921	972	304,905	305,683	597	9,240	64.1	487,552	181,890	115	48	29.5	46
		1920	573	373,677	378,260	705	12,027	76.2	613,846	289,141	106	61	36.4	14
Pere Marquette.....		1921	2,196	308,281	315,658	6,615	7,297	65.6	413,440	180,964	171	38	18.2	20
		1920	2,200	363,575	372,490	5,793	9,369	78.6	495,536	259,544	152	47	23.7	...
Pitts. & Lake Erie.....		1921	225	63,824	73,384	601	2,105	62.6	150,967	83,215	61	24	28.2	21
		1920	225	115,465	121,207	1,486	4,485	71.5	327,529	197,885	57	21	26.9	6
Wabash.....		1921	2,418	534,146	560,938	6,954	15,153	70.0	802,000	343,814	270	78	22.4	49
		1920	2,418	610,228	621,794	6,618	18,093	76.2	950,786	455,048	264	76	22.4	6
Ohio-Indiana-Allegheny Region:														
Baltimore & Ohio.....		1921	5,185	1,636,926	1,881,304	138,232	39,357	60.7	2,572,741	1,267,476	991	411	29.3	154
		1920	5,154	2,065,454	2,440,656	145,107	56,242	66.4	3,722,353	1,998,339	1,075	246	18.6	24
Central of N. J.....		1921	679	258,539	286,873	36,510	5,604	60.1	382,069	174,647	203	59	22.4	9
		1920	679	347,632	380,570	39,617	7,480	63.9	493,253	259,093	218	52	19.4	...
Chicago & Eastern Ill.....		1921	1,131	229,412	230,394	3,664	5,118	58.5	314,734	146,182	130	49	27.2	55
		1920	1,131	315,756	325,307	4,917	7,736	65.0	476,927	246,109	128	56	30.5	2
C., C., C. & St. L.....		1921	2,382	569,995	593,297	2,884	15,322	59.8	939,316	400,001	290	148	33.8	27
		1920	2,393	742,299	775,540	438	20,680	65.0	1,254,363	594,843	293	98	25.1	...
Elgin, Joliet & Eastern.....		1921	837	77,587	83,817	3,900	2,318	67.0	167,340	89,639	97	11	9.9	41
		1920	834	163,943	187,513	11,951	5,324	72.6	365,307	205,908	95	13	12.3	1
Long Island.....		1921	395	41,338	46,194	7,501	446	56.4	26,710	10,075	34	8	19.6	2
		1920	395	43,672	60,848	13,403	512	63.8	25,742	10,200	38	11	22.0	...
Pennsylvania System.....		1921	10,739	3,929,293	4,252,074	308,810	100,808	62.3	6,860,930	3,388,981	2,649	834	24.0	868
		1920	10,838	5,256,249	5,830,822	439,198	139,570	67.6	8,918,044	4,796,266	2,145	876	29.0	8
Phila. & Reading.....		1921	1,119	480,507	504,438	65,992	11,469	61.3	783,701	405,987	367	84	18.7	169
		1920	1,119	589,497	680,303	96,947	15,133	70.4	1,017,808	590,084	299	80	21.2	11
Pocahontas Region:														
Chesapeake & Ohio.....		1921	2,548	733,183	791,516	22,964	21,003	55.3	1,696,036	917,372	431	129	23.0	57
		1920	2,520	882,895	980,099	25,054	26,174	60.6	1,997,579	1,095,622	418	116	21.7	1
Norfolk & Western.....		1921	2,221	688,146	819,340	33,548	18,469	57.3	1,452,452	790,132	606	89	12.8	207
		1920	2,190	861,355	1,096,774	50,105	25,999	62.8	1,978,900	1,686,858	479	203	29.8	40
Southern Region:														
Atlantic Coast Line.....		1921	4,887	518,249	519,392	7,342	11,163	63.3	560,102	220,973	294	113	27.8	54
		1920	4,889	654,933	658,302	9,292	14,078	67.3	716,179	294,663	278	139	33.3	1
Central of Georgia.....		1921	1,908	267,556	273,381	3,410	5,343	66.2	289,506	120,822	110	23	17.0	...
		1920	1,913	288,386	292,993	6,459	8,860	71.1	296,868	124,618	110	20	15.4	...
I. C. (inc. Y. & M. V.).....		1921	6,151	1,482,989	1,489,040	33,517	38,321	62.9	2,427,182	1,078,466	703	98	12.2	19
		1920	6,151	1,992,664	2,061,949	41,408	51,087	64.2	3,210,881	1,469,003	705	100	12.4	20
Louisville & Nashville.....		1921	5,026	1,495,866	1,604,636	58,585	26,513	61.4	1,667,336	778,532	551	102	15.6	24
		1920	5,024	1,629,394	1,784,700	62,840	29,537	65.5	1,770,013	847,006	536	116	17.8	...
Seaboard Air Line.....		1921	3,537	392,819	398,574	6,648	8,084	66.8	415,454	165,263	166	92	35.6	...
		1920	3,537	451,655	458,248	7,759	10,141	72.7	529,345	238,849	176	95	35.0	...
Southern Ry.....		1921	6,942	1,248,422	1,274,243	27,214	26,352	64.6	1,395,942	554,415	898	221	19.7	52
		1920	6,942	1,598,901	1,632,549	39,768	35,250	72.0	1,819,894	807,930	887	218	19.7	5
Northwestern Region:														
C. & N. W.....		1921	8,334	1,409,544	1,455,190	18,178	27,994	59.2	1,674,822	627,808	838	245	22.6	106
		1920	8,323	1,760,085	1,791,857	28,408	39,459	66.3	2,266,687	1,078,864	676	238	26.1	...
C., M. & St. P.....		1921	10,992	1,370,466	1,403,957	61,197	33,087	65.8	1,802,674	798,912	876	213	19.6	160
		1920	10,626	1,730,855	1,789,180	71,298	53,307	66.0	2,363,816	1,090,854	664	259	28.0	9
C., St. P., M. & O.....		1921	1,726	284,665	301,346	11,330	5,292	69.8	277,285	120,122	156	57	26.7	52
		1920	1,726	355,424	374,186	14,637	6,643	71.3	351,866	157,557	166	42	20.2	26
Great Northern.....		1921	7,978	675,191	692,217	23,438	17,747	64.6	1,041,651	483,345	604	175	22.4	268
		1920	7,985	934,509	963,993	34,077	27,171	65.6	1,634,695	835,598	478	200	29.5	51
M., St. P. & S. Ste. M.....		1921	4,225	414,724	444,343	5,641	8,579	66.9	430,928	181,936	344	56	13.9	41
		1920	4,227	530,206	537,576	11,063	12,357	72.3	614,104	290,038	330	75	18.5	34
Northern Pacific.....		1921	6,408	650,735	681,792	43,847	18,733	68.8	1,023,521	462,866	626	150	22.2	116
		1920	6,405	852,605	898,774	64,169	24,225	69.8	1,358,778	654,520	492	142	22.4	39
Ore.-Wash. R. R. & Nav.....		1921	2,198	164,190	178,681	21,417	3,952	74.2	214,633	102,177	115	39	25.3	8
		1920	2,146	258,677	294,940	41,252	6,192							

Compared with July, 1920, for Roads with Annual Operating Revenues above \$25,000,000

		Cars on daily line			Gross tons		Net tons		Net ton miles		Net ton miles		Pounds of coal		Passenger service	
		Home	Foreign	Total	Per cent un-service-able	Stored	per train, excluding locomotive and tender	Net tons per train	Net tons per car	Net ton miles per car-day	Car-miles per car-day	per mile of road per day	per 1,000 gross ton-miles	Train-miles	Passenger train car-miles	
New England Region:																
Boston & Albany.....		1921	3,866	3,936	7,802	7.3	1,131	955	370	20.7	365	27.8	7,231	197	313,597	2,063,683
		1920	623	8,477	9,100	4.3	.....	1,038	497	27.9	599	32.1	13,838	191	332,704	2,128,012
Boston & Maine.....		1921	18,523	12,281	30,804	21.1	2,921	1,085	442	21.3	232	16.1	2,896	146	945,638	5,319,161
		1920	7,558	28,484	36,042	8.9	.....	1,083	490	24.6	343	19.5	5,012	.....	906,261	5,883,392
N. Y., N. H. & H.....		1921	27,037	14,027	41,064	21.9	833	1,198	495	21.8	177	12.4	3,716	156	1,117,459	7,353,973
		1920	8,349	34,805	43,154	7.5	.....	1,131	521	24.4	212	12.2	4,708	180	1,261,495	8,133,721
Great Lakes Region:																
Delaware & Hudson....		1921	11,194	5,036	16,230	13.6	1,339	1,614	790	32.6	531	26.8	9,798	176	225,541	1,287,739
		1920	4,098	15,416	19,514	5.6	.....	1,736	926	35.9	698	29.5	15,878	182	238,914	1,327,899
Del., Lack. & Western..		1921	17,898	7,074	24,972	13.7	495	1,696	790	26.1	495	28.1	12,406	162	511,678	3,871,434
		1920	4,413	20,764	25,177	5.6	.....	1,769	904	30.0	667	32.0	16,858	.....	520,823	3,926,142
Erie (inc. Chic. & Erie)		1921	40,922	14,868	55,790	21.7	11,028	1,932	883	27.3	446	24.7	11,013	129	684,884	5,361,532
		1920	8,530	53,743	62,273	7.4	.....	2,030	1,004	30.2	593	28.9	16,360	139	731,756	5,430,762
Lehigh Valley		1921	32,578	8,581	41,159	15.1	3,886	1,739	800	28.3	331	18.8	9,510	155	370,802	2,956,049
		1920	9,625	27,075	36,700	7.3	.....	1,873	1,002	33.4	589	25.1	15,130	159	391,745	3,134,883
Michigan Central.....		1921	19,964	12,014	31,978	19.7	1,197	1,652	620	20.7	266	20.6	4,650	111	624,246	5,480,919
		1920	4,319	33,777	38,096	7.9	.....	1,788	855	25.4	408	22.3	8,511	.....	669,725	6,282,192
New York Central.....		1921	91,726	43,619	135,345	16.3	27,255	1,984	836	24.5	308	20.1	7,360	111	2,490,233	20,663,826
		1920	27,694	129,365	157,059	7.8	.....	2,351	1,158	30.2	495	25.0	13,757	.....	2,707,987	21,873,144
N. Y., Chic. & St. L.....		1921	5,810	3,777	9,587	18.7	1,464	1,599	597	19.7	612	48.5	10,255	96	89,410	596,255
		1920	1,084	9,759	10,843	6.6	.....	1,643	774	24.0	860	47.0	16,290	.....	89,852	584,846
Pere Marquette.....		1921	11,527	8,745	20,272	17.9	1,000	1,341	587	24.8	288	17.7	2,658	121	336,485	1,828,840
		1920	3,739	19,770	23,509	6.6	.....	1,363	714	27.7	356	16.4	3,805	148	342,664	1,962,243
Pitts. & Lake Erie.....		1921	19,080	7,743	26,823	33.9	2,145	2,365	1,304	39.5	100	4.0	11,950	88	111,914	623,110
		1920	3,638	20,656	23,694	14.2	.....	2,837	1,714	44.1	269	8.5	28,426	70	117,288	635,273
Wabash		1921	13,295	10,124	23,419	10.6	1,055	1,502	644	22.7	474	29.8	4,587	141	529,312	2,946,668
		1920	4,919	23,869	28,788	8.2	.....	1,558	762	25.7	521	26.6	6,205	151	565,001	3,018,794
Ohio-Indiana-Allegheny Region:																
Baltimore & Ohio.....		1921	72,904	27,674	100,578	10.0	6,030	1,572	774	32.2	407	20.8	7,886	174	1,398,686	9,035,055
		1920	22,630	84,825	107,455	7.1	.....	1,802	968	35.5	600	25.4	12,508	.....	1,392,239	8,609,481
Central of N. J.....		1921	20,739	7,504	28,243	23.2	4,560	1,478	676	31.2	199	10.7	8,303	168	391,142	1,975,085
		1920	4,907	19,946	24,853	9.8	.....	1,419	745	34.6	336	15.2	12,314	.....	405,376	1,964,998
Chicago & Eastern Ill.		1921	16,466	3,089	19,555	10.6	4,100	1,372	637	28.6	241	14.4	4,169	151	222,173	1,478,981
		1920	8,427	15,418	23,845	8.3	.....	1,508	779	31.8	333	16.1	7,020	.....	235,039	1,493,435
C., C. C. & St. L.....		1921	19,322	14,826	34,148	12.8	2,642	1,648	702	26.1	378	24.2	5,416	131	708,568	4,428,811
		1920	4,708	31,425	36,133	8.0	.....	1,690	801	28.8	531	28.4	8,018	.....	776,158	4,822,022
Elgin, Joliet & Eastern..		1921	9,735	3,539	13,274	9.9	2,363	2,157	1,155	38.7	218	8.4	3,456	117	.....	.....
		1920	8,105	8,564	16,669	7.3	.....	2,228	1,256	38.7	398	14.2	7,960	.....	.....	.....
Long Island.....		1921	2,450	3,268	5,718	2.6	1,120	646	244	22.6	57	4.5	824	346	229,546	1,402,524
		1920	591	5,385	5,976	3.7	.....	589	234	19.9	55	4.3	834	.....	233,707	1,444,911
Pennsylvania System....		1921	120,718	63,610	184,328	13.4	58,482	1,746	862	33.6	384	18.4	10,180	128	5,368,508	36,201,969
		1920	94,768	245,104	339,872	5.5	.....	1,697	912	34.4	455	19.6	14,276	.....	5,646,186	37,864,673
Phila. & Reading.....		1921	28,817	9,269	38,086	8.6	7,309	1,631	845	35.4	344	15.8	11,705	173	536,967	2,456,785
		1920	6,393	32,857	39,250	3.4	.....	1,727	1,001	39.0	485	17.7	17,007	.....	541,853	2,508,139
Pocahontas Region:																
Chesapeake & Ohio.....		1921	41,885	10,850	52,735	9.2	4,298	2,313	1,251	43.7	561	23.2	11,613	117	447,842	2,571,572
		1920	12,246	25,191	37,437	9.9	.....	2,263	1,241	41.9	944	37.2	14,025	.....	449,412	2,569,889
Norfolk & Western.....		1921	37,444	5,414	42,858	9.0	4,152	2,111	1,148	42.8	593	24.2	11,476	155	416,265	2,715,463
		1920	13,552	22,967	36,519	5.9	.....	2,274	1,262	42.0	960	36.4	16,010	.....	414,434	2,943,556
Southern Region:																
Atlantic Coast Line.....		1921	20,840	6,153	26,993	22.9	.....	1,081	426	19.8	264	21.1	1,459	136	719,321	4,278,560
		1920	5,362	21,487	26,849	13.0	.....	1,094	450	20.9	354	25.1	1,944	.....	763,642	4,535,409
Central of Georgia.....		1921	4,861	3,787	8,648	15.4	.....	1,082	452	22.6	451	30.1	2,043	155	322,135	1,593,931
		1920	1,470	6,678	8,148	4.4	.....	1,029	432	21.3	493	32.6	2,102	.....	317,405	1,639,545
I. C. (inc. Y. & M. V.)....		1921	48,512	16,648	65,160	12.6	6,946	1,637	727	28.1	534	30.2	5,655	127	1,425,986	8,195,244
		1920	12,590	45,466	58,056	5.1	.....	1,611	737	28.8	816	44.2	7,703	.....	1,404,151	8,475,275
Louisville & Nashville....		1921	40,229	15,435	55,664	26.1	94	1,115	519	29.3	450	25.0	4,984	160	961,307	5,636,106
		1920	14,320	27,983	42,303	9.2	83	1,086	520	28.7	646	34.4	5,439	.....	924,191	5,592,900
Seaboard Air Line.....		1921	11,525	6,739	18,264	29.5	.....	1,058	421	20.4	292	21.4	1,507	173	561,757	3,193,925
		1920	3,364	15,926	19,290	8.7	.....	1,172	529	23.6	399	23.3	2,178	171	575,469	3,009,050
Southern Ry.....		1921	39,379	15,485	54,864	19.9	1,957	1,118	444	21.0	326	24.0	2,576	191	1,326,402	7,855,123
		1920	14,649	49,082	63,731	3.7	.....	1,138	505	22.9	409	24.8	3,754	.....	1,457,968	8,908,146
Northwestern Region:																
C. & N. W.....		1921	51,174	22,692	73,866	10.1	8,900	1,188	445	22.4	274	20.6	2,430	163	1,697,026	11,020,761
		1920	26,927	57,193	84,120	7.0	.....	1,288	613	27.3	414	22.8	4,182	.....	1,728,705	11,120,457
C., M. & St. P.....		1921	50,042	20,457	70,499	20.9	1,845	1,315	583	24.1	366	23.0	2,344	148	1,533,010	9,834,996
		1920	19,789	50,904	70,693	8.9	.....	1,366	630	25.2	498	29.9	3,312	.....	1,440,334	9,924,435
C., St. P., M. & O.....		1921	4,451	10,334	14,785	17.8	2,628	974	422	22.7	262	16.5	2,245	148	322,117	1,912,111
		1920	2,257	11,165	13,422	8.9	.....	990	443	23.7	379	22.4	2,944	.....	321,944	2,030,075
Great Northern.....		1921	47,228	5,376	52,604	20.0	.....	1,543	716	27.2	296	16.9	1,954	145	1,002,138	6,676,060
		1920	21,564	22,651	44,215	8.5	.....								

A Regional Adjustment Board

Two roads, the Baltimore & Ohio and the New York Central, have agreed with their train-service employees on what is called a regional board, for arbitrating disputes growing out of personal grievances or from the interpretation of the application of existing working schedules. It is named the "Train Service Board of Adjustment." This board will consist of eight members, four to represent the two railroads and four chosen by the chief executive officers of the four train service organizations, engineers, firemen, conductors and brakemen. A tentative course of action has been outlined. The agreement provides that when disputes arise the settlement of which by the usual method of direct conference has failed, they shall be passed upon by the new regional board whose decisions will be final and binding on both the railroads' management and the train service employees. It will not come within the province of this board, however, to hear any disputes arising from proposed changes in rules, working conditions or rates of pay; such matters will go before the Railroad Labor Board.

University of Illinois

Edward Charles Schmidt has been appointed professor of railway engineering at the University of Illinois, and head of that department. Professor Schmidt was associate professor and professor of railway engineering at the University for 11 years up to November, 1917, when he resigned to enter military service as Major of Ordnance. He was graduated from Stevens Institute of Technology in 1895 with the degree of mechanical engineer. He was connected with the Kalbfleisch Chemical Company, New York and Buffalo; with the Edison Electric Illuminating Company of Brooklyn, N. Y., and with the American Stoker Company. He first went to Urbana in 1898 as instructor of machine design. After five years there he went into the employ of the American Hoist & Derrick Company of St. Paul, and in 1904-06 he was engineer of tests with the Kerr Turbine Company.

After a comparatively short time in the Ordnance Corps, Professor Schmidt was requisitioned by the Fuel Administration, and later was transferred to the Railway Administration in charge of the campaign for fuel economy in locomotive service. From August, 1919, until the present time, he has been mechanical engineer for the North American Company.

Vandalism on the A. B. & A.

B. L. Bugg, receiver in charge of the Atlanta, Birmingham & Atlantic, has called upon the state authorities to protect the road, its trains, employees and passengers, from train wreckers, who use dynamite; and has offered a reward of \$5,000 for the conviction of the guilty person or persons of murder, a locomotive engineman having been killed when a freight train was derailed by dynamite on the night of September 7. This wreck was near Cascade, eight miles from Atlanta; and a similar outrage had been committed several days before this at a place near Cordele. Colonel Bugg gave to the governor of the state a statement of 33 wrecks or attempts at wrecks which had been committed on the lines of the road since the beginning of the strike, on March 5, which led to the employment of non-union men to run the company's trains. The governor, following a conference with the receiver, offered a reward of \$500 for the detection of the miscreants.

At Fitzgerald, Ga., on September 5th, 19 men, including the mayor of Fitzgerald, were indicted by a special grand jury on a charge of interfering with the employees of the road. Of the 19 men, two were classed as enginemen, two trainmen, ten shopmen, two conductors and one clerk, all, evidently, men who had been among the strikers.

The Governor of Georgia has appointed a special commission to investigate the wrecks on this road, consisting of C. M. Candler, chairman of the State Railroad Commission; William P. Turner, master mechanic of the Georgia Railroad and Woods Hudson, general superintendent of the Georgia Car & Locomotive Company. The Bureau of Safety of the

Interstate Commerce Commission is also making an investigation. The governor was requested to appoint the commission in a letter from three machinists—a "committee," who complained that organized labor had been unjustly accused in connection with the wrecks.

Welding Equipment Investment Nets 300 Per Cent

Practical application of the electric arc welding process was the subject of a paper read by E. Wanamaker, electrical engineer of the Rock Island, at a meeting of the Metropolitan Section of the American Welding Society, on September 20, at the Engineering Societies' Building, New York, N. Y. The paper dealt principally with the equipment, materials and skill required for successful welding. Mr. Wanamaker spoke particularly of the manner in which results are obtained on the Rock Island. A book of loose-leaf specifications is sent to welders and welding foremen, which explains what can be welded, how the work can best be done, how to test the quality of a weld, etc., giving the welder sufficient information to work intelligently, provided he understands the fundamental principles, and keeping him up to date on all new practices. New sheets, superseding those in the book, are sent out as new methods are developed. Cleanliness and impressing the welder with his responsibility, said Mr. Wanamaker, are big factors in getting and maintaining good results.

It has been shown that an investment of \$150,000 in welding equipment on the Rock Island has in a few years saved three times its cost.

After the practice of welding locomotive tires was established, no new tires were purchased for a period of three years, and the number now bought is only about one-third of the former average.

Railway Returns for July

The Interstate Commerce Commission's summary of revenues and expenses for July for 201 Class I roads is as follows:

Item No.	Item	July		Seven Months	
		1921	1920	1921	1920
1	Average number of miles operated.	235,169.28	235,095.12	235,219.54	234,519.74
2	Revenues:				
3	Freight	\$314,611,353	\$356,091,063	\$2,184,159,000	\$2,213,997,964
4	Passenger	108,865,325	123,218,449	683,846,505	689,267,311
5	Mail	7,307,354	7,741,624	56,401,740	109,885,860
6	Express	8,140,074	14,389,175	49,784,819	88,961,717
7	All other transportation	13,718,860	13,466,067	91,715,454	81,500,611
8	Incidental	9,766,642	13,829,879	69,586,356	83,060,474
9	Joint facility—Cr.	610,047	623,076	4,512,007	4,184,480
10	Joint facility—Dr.	170,209	209,579	1,225,276	1,343,337
11	Railway operating revenues.	462,849,446	529,149,754	3,138,780,605	3,269,515,080
12	Expenses:				
13	Maintenance of way and structures	65,161,318	100,857,228	435,897,125	549,206,480
14	Maintenance of equipment	95,097,865	138,580,346	737,351,678	848,885,296
15	Traffic	6,877,955	6,601,766	49,903,994	38,124,146
16	Transportation	178,618,999	247,690,003	1,377,721,187	1,525,804,827
17	Miscellaneous operations	4,285,056	5,781,346	29,409,396	34,283,708
18	General	13,225,299	15,200,764	100,837,074	93,627,594
19	Transportation for investment—Cr.	425,309	457,364	3,408,785	2,115,065
20	Railway operating expenses.	362,841,183	514,254,089	2,727,711,669	3,087,816,986
21	Net revenue from railway operations	100,008,263	14,895,665	411,068,936	181,698,094
22	Railway tax accruals	23,585,957	23,708,993	157,580,940	155,946,582
23	Uncollectible railway revenues.	104,899	59,092	671,295	613,580
24	Railway operating income	76,317,407	8,872,420	252,816,701	25,137,932
25	Equipment rents Dr., balance	5,249,298	1,735,437	29,388,691	16,491,618
26	Joint facility rent Dr., balance	1,769,588	1,445,433	9,875,761	10,654,312
27	Net of items 22, 23 and 24	69,298,521	12,053,290	213,552,249	2,007,998
28	Ratio of expenses to revenues (per cent)	78.39	97.18	86.90	94.44

² Includes \$2,823,714, sleeping and parlor car surcharge.

³ Includes \$18,734,330, sleeping and parlor car surcharge.

Traffic News

The Public Service Commission of Oregon has ordered extensive reductions in freight rates on sand, gravel and crushed stone.

The passenger trains of the Atlantic Coast Line, in the month of August, made a record of 97.8 per cent maintenance of schedules. In July, 96.9 per cent of the trains maintained their schedules.

Sunday excursion trains on the Pennsylvania Railroad System, in three months, May, June and July, carried 291,669 passengers. In July, including Monday, July 4, the number of such trains run was 209. Of the total number of passengers above noted, about 85 per cent (248,566 passengers occupying 4139 cars) were reported by the Eastern Region.

Proposals to reduce transportation taxes, as agreed upon by the House committee, have been modified by the Senate committee. This committee has decided to restore all transportation taxes (which the House committee would repeal as of January 1) so that those on freight and passenger and Pullman accommodations would continue throughout 1922, but at only half the present rates.

The Railway Commissioners of Canada, by a vote of three to five, have agreed to make no reduction in freight rates at the present time. Commissioners Corvell and Nantel were in favor of a general reduction of ten per cent, with certain exceptions. The majority held that no action could reasonably be taken until the special investigation of railroad wages, now going on, has been concluded.

Portrait Tickets on the New York Central

The use of photographs on commutation tickets has proved so successful on the New York Central since September 1, when the requirement was extended to a large number of stations, that announcement is made that, beginning October 1, the portraits will be required on these tickets at all stations in the New York City suburban territory. Sales of monthly tickets have fallen off about 25 per cent, indicating that the railroad has been losing \$500,000 yearly by the use of these tickets by passengers who ought to have paid the full single-trip fare. For tickets to be used, beginning with October 1, passengers may have photographs taken and the purchase may be made at any time after September 21. They may have their photographs taken at the Grand Central Terminal, New York, for 35 cents each.

Rates on Western Vegetables to Be Reduced

After a conference between representatives of the transcontinental carriers, western vegetable shippers and the Interstate Commerce Commission, a decision has been reached to make reductions desired by shippers in the rates on vegetables from California and other Pacific Coast territory to the territory east of the Rocky Mountains as far as Chicago and the Mississippi river.

The basis to be employed is to substitute for the increase of 33 1/3 per cent made on August 26, 1920, an increase of 15 per cent over the rates in effect August 25, 1920, thus removing more than half of the increase made at that time.

A large volume of movement takes place annually under the rates to be reduced and it is hoped that the reductions will materially assist growers and shippers of western vegetables.

Freight Rate Revisions in Canada

The Canadian Railway Association, since January 1, last, has reduced 1,450 rates, voluntarily, to meet varying traffic and commercial conditions. This work has been supplementary to the blanket reduction of five per cent, ordered by the Government, which went into effect in January. These reductions cover about

400 commodities. Among these are those on lumber from British Columbia to eastern Canada; livestock between all Canadian points—a reduction of about 25 per cent; on grain and grain products for export from Bay ports and Fort William via Montreal and other Atlantic ports, from nine to 26 per cent.

Transcontinental rates on 48 different staple commodities show reductions of from six to 32 per cent; and 78 commodities to United States consuming points show reductions varying from four per cent to 64 per cent.

Freight Traffic Officers Meet at Chicago

The American Association of Freight Traffic Officers held its annual meeting at the Drake hotel, Chicago, on September 19, and its annual dinner at the same place that evening. The principal speakers were J. F. T. O'Connor of North Dakota, who was the candidate for governor of that state on an independent ticket a year ago, and Henry A. Palmer, editor of the *Traffic World*. Mr. O'Connor spoke upon the business man in government affairs and urged he should take a more lively interest in the conduct of the government. He also told of the work of the non-partisan league in his home state. Mr. Palmer opened his remarks with a statement of the fundamental railroad problem and then called attention to the needed co-operation and understanding between carrier and shipper if the problem is to be solved. He said, "I know that talk of co-operation between carrier and shipper sounds stale. We all believe in it—or say we do. But we do not all practice it." Mr. Palmer then referred to what might be called the proper business attitude on the part of the railroads. He said a lack of it exhibited itself in several ways. "There are for instance," he continued, "the railroad rate committees. Their purpose is good and the carriers are entitled to and have received great credit for their actions but the plan has been permitted to degenerate into a time-killing scheme that is becoming the bane of shippers. There is perhaps no one thing in which the traffic department of the railroads could better help themselves to a higher place in the esteem of their customers than by revising this rate committee plan so that it will work with something like business method. If it cannot be revised then it had better be cast aside altogether. It not only annoys the shipper but it is suppressive of initiative in the carrier." Speaking of the fundamental railroad problem and the matter of railroad initiative and enterprise in the broader aspect, Mr. Palmer said, "we have a perplexing phase of the railroad problem before us. But do we see railroad initiative, railroad leadership in an attempt to solve it? The attitude of the railroads seems to be that the law is what it is and times are what they are and neither is their fault. They are victims and their hands are tied. It is true that they are shackled by over-regulation, but it is also true that they have the benefit of a degree of protection not afforded to other business. But even if the hardships outweigh the benefits there is still opportunity for the exercising of talent in an attempt to make the scale turn the other way." In referring to the present rate situation, he said that it had been successfully shown that high rates have not throttled or even hampered business generally in the sense that they have prevented tonnage from moving. After referring to the 4 1/2 per cent earned last July on the valuation of all the roads as fixed by the Interstate Commerce Commission, Mr. Palmer said that while 4 1/2 per cent was not enough it was considerably more than most businesses were now earning. Is there not here then, he queried, an opportunity for constructive action on the part of the railroads that will not only aid some business that is in even worse condition than the railroads, and thus contribute to the return to normal conditions, but that will also be a master stroke in winning for the carriers a place in public esteem which rightly or wrongly they are losing?

In conclusion, Mr. Palmer said that there should be at this time a meeting of transportation minds in the forming of a wise and definite policy. That policy should aim immediately at a reduction of operating costs through the abolition of the Labor Board and by all other possible methods; a readjustment of rates so as to give the shipping public the benefit of any possible saving that may be achieved by this means; the establishment of some degree of certainty as to the rate level for some time to come; and the cultivation of business methods in the dealings of railroads with shippers and with each other, to the operation especially of individual initiative and enterprise.

Commission and Court News

Interstate Commerce Commission

The commission has suspended until January 18, 1922, the operation of an item in a Kansas City Southern tariff which proposes the cancellation of the commodity rates on live poultry and eggs from stations on the Kansas City Southern in Missouri, Arkansas and Oklahoma to New Orleans, La.

State Commissions

The State Railroad Commission of California has protested to the Interstate Commerce Commission against the application of the Santa Fe to acquire control of the California Southern, an intrastate line serving the cotton growers between Rice Junction and Ripley. The State Commission bases its protest on a claim of complete jurisdiction over an intrastate carrier.

The Railroad Commission of Texas has denied permission to James A. Baker, receiver of the International & Great Northern, to incur a debt of \$193,400, which he had recently applied for to the Interstate Commerce Commission. The Texas state law prohibits receivers of railroads from issuing securities exceeding \$100,000 in value, without permission from the state railroad commission.

The State of Alabama has asked the United States District Court for an order enjoining the Interstate Commerce Commission from placing a surcharge of 50 per cent on Pullman and parlor car transportation within the boundaries of Alabama. The point is stressed that the federal rate-making body has no right to interfere with the Alabama Public Service Commission in prescribing rates for intra-state traffic. Twice the railroads doing business in Alabama requested the Alabama Public Service Commission to authorize the imposition of the 50 per cent Pullman and parlor car surcharge and twice this request was denied by the state commission. An appeal was then taken by the railroads to the Interstate Commerce Commission, which authorized the collection of the surcharge on intrastate passenger transportation, and later declined to modify this order.

The Public Utilities Commission of Rhode Island has refused to suspend a tariff filed by the New York, New Haven & Hartford, making advances in passenger fares on the line between Providence and Bristol. This line is operated partly by electric trains and commutation rates are very low. Remonstrances against the advances have been filed also with the Interstate Commerce Commission and with the Massachusetts Commission. The Rhode Island Commission in its decision says that this section of the New Haven railroad was operated during the first six months of this year at a loss of \$106,525; that the monthly tickets are left at the old rate and that if there is any discrimination as between passengers on different sections of the New Haven road it is in favor of this section. To suspend the rates would continue a burden of loss upon the company, whose existence appears to be very seriously endangered by the condition of its finances.

Personnel of Commissions

Charles R. Vanneman, heretofore at the head of the Steam Railroad division and connected with the New York State Public Service Commission in various capacities for the past 11 years, has been appointed chief engineer of the new commission at a salary of \$8,000 a year. Under the reorganized commission, which, unlike the former commission for the second district, has authority throughout the whole state, the chief engineer will be in charge of engineering and inspection work in connection with all steam railroads, street railroads, including grade crossing elimination; and also all electric light, gas, telephone and telegraph companies.

Foreign Railway News

Belgium Gets Contract for Big Chinese Bridge

The Peking-Hankow Railway has, according to press dispatches, awarded a contract to a Belgian firm for the construction of a bridge over the Yellow river. This firm's bid was stated at \$10,500,000. It was reported that four American concerns entered bids for the structure, which will be in excess of 1½ miles in length.

Ohio Man Appointed American

Purchasing Agent for Chinese Government

Charles H. Kettenring, president of the Defiance Machine Works, Defiance, Ohio, has been appointed purchasing agent in America for the republic of China. Mr. Kettenring will have charge of purchases in this country of practically all classes of equipment and supplies of a mechanical or engineering nature.

Australian Railway Officers to Visit America

The railway commissioners of Victoria and New South Wales, Australia, recently announced their decisions to send delegations of railway officers to the United States to study railway operations, according to a report from Trade Commissioner A. W. Ferrin, announced in Commerce Reports. The delegations from each state consist of four members, who, remaining in America for three or four months, will concentrate their attention on an intensive study of the most modern and efficient railway facilities of the country.

Passport Visas Cost More Than Railway Fares

While a welcome beginning has been made in the removal of passport difficulties, the prices charged for visas by several countries remain exorbitant, says the Railway Gazette (London). The price of a first class railway ticket from Paris to Constantinople by the shortest route is \$215 (at par exchange) and of a second class ticket about \$100. The passenger passes through six countries, and the total price of the six different passport visas required amounts to \$106 or about \$6 more than the cost of a second-class ticket. The French visa costs 28 cents, the Swiss 30 cents, the Italian \$27, the Czecho-Slovakian \$27.20, the Greek \$26, and the Serbian \$25.

Electrification of Japanese Railways

The official plan for the electrification of the railways of Japan has recently been revised and a new electric bureau established, according to information published in Commerce Reports. According to the plan now being worked out by the Department of Railways, the first steps will be to electrify the entire Tokaido line, the traffic of which has been increasing enormously each year, from Tokyo to Kobe, and a part of the Central line between Iidamachi station in Tokyo and Kofu, in the rear of Mount Fuji, where many tunnels make transportation slow. Electric trains will be used exclusively for passengers, freight trains being operated by steam as at present.

Relative Value of Railway Supply Exports

According to a pamphlet recently issued by the Chamber of Commerce of the United States, railway cars and locomotives ranked respectively twenty-fifth and twenty-sixth in value of all of our exports for the first six months of the current year. Steel rails ranked thirty-fifth. If, however, the value of these exports had been added together, viz. cars and parts, \$21,205,000; locomotives \$20,745,000; and steel rails, \$14,806,000—the result \$56,756,000, representing exports of railway supplies, would have been the eighth in the list. The order would have been as follows: wheat, raw cotton, tobacco, coal and coke, flour, lard, illuminating oil and railway supplies.

July Exports of Locomotives

Exports of locomotives in July fell to 30, valued at \$876,840, compared with 136, valued at \$4,254,474, during the previous month. The July total is the lowest of any month during the current year. Detailed figures by countries, as compiled by the Bureau of Foreign and Domestic Commerce, are as follows:

Countries	Number	Dollars
Canada	2	20,900
Mexico	10	245,000
Other British West Indies	1	2,250
Colombia	8	274,100
Peru	1	12,000
Japan	1	23,100
Australia	1	12,550
Philippine Islands	6	286,940
Total	30	876,840

Germans Seek to Develop Italian Lignite Fields

LONDON.

German capitalists have offered to the Italian government their co-operation for the exploitation of the mines of lignite in Italy to be used as fuel for the railways, in exchange for the facilities the Italian government would grant to Germany in connection with their confiscated properties in Italy. According to reports published by the Italian papers, Germany estimates that there are in Italy about 300,000,000 tons of lignite, of which only 3,000,000 tons are produced yearly. They propose to form a German-Italian company which should undertake the exploitation of the whole lignite wealth of Italy and to build special plants in which the lignite should be distilled, and, through a process discovered by them during the war, obtain oil to be used as fuel. It is estimated that the lignite produced and the oil obtained would cover the whole demand for fuel of Italy including the railways.

July Exports of Car Wheels and Axles

Exports of car wheels and axles totaled only \$78,237 in July, as compared with \$236,719 during the previous month. Detailed figures by countries, as compiled by the Bureau of Foreign and Domestic Commerce, are as follows:

Countries	Dollars
Canada	5,050
Costa Rica	384
Guatemala	839
Honduras	120
Nicaragua	356
Panama	43
Salvador	745
Mexico	40,135
Other British West Indies	90
Cuba	262
Dominican Republic	332
Argentina	2,975
Brazil	665
Chile	1,329
Colombia	426
British India	1,995
Japan	20,656
Belgian Congo	35
Portuguese Africa	1,800
Total	78,237

Tampico-Mexico City Short Line to Be Completed

Information has been received from the City of Mexico to the effect that the National Railways of Mexico have awarded the contract for the completion of the short line of that system to extend from Tamos, on the Tampico-San Luis Potosi division, to a connection with the Hidalgo and Northwestern division, near Honey. It is stated that the work of building the new line will be resumed by October 1. The construction of this Tampico-City of Mexico short line, as it is called, was started about 12 years ago and about 50 miles of grade and track were finished before the revolutionary period caused a cessation of the work. From a traffic standpoint it is regarded as one of the most important railroad projects ever undertaken in Mexico. It will mean the reducing of the distance between the port of Tampico and the capital by about two hundred miles and the line will traverse a region that is very rich in agricultural and mineral resources. It also will penetrate a coastal territory that is believed to contain vast oil potentialities. With the resumption of construction of this line the rumor has been revived that the contract will be let soon for building the long proposed road that is to run between Tampico and Matamoros, near the mouth of the Rio Grande. B. F. Yoakum, of New York, while at the

head of the Frisco system, obtained a concession from the Diaz government for the construction of a railroad down the Gulf coast of Mexico from Matamoros, but difficulties arose that prevented him from undertaking the actual building of the line at that time.

Portuguese Railway Results

The Portuguese Railways Company, which owns and works the principal lines running out of Lisbon and Oporto and the Spanish frontier, has just held its annual general meeting, according to the Railway Gazette (London). The receipts for 1920 were \$29,889,561, or \$15,053,098 more than in 1919, this considerable increase being due to the general increase in rates. Notwithstanding this, the company is no better off, operating expenses having continued to rise in even greater ratio, with the result that the year's operation shows a deficit of \$7,512,156. Failing an early and radical reduction in the cost of fuel it is difficult to foresee the company's future; rates have already been raised 200 per cent, and further relief can therefore hardly be looked for on the receipts side.

July Exports of Cars

Freight cars totaling 464, valued at \$705,281, were exported in July, compared with 536, valued at \$1,096,256, during the previous month. Exports of parts of cars were valued at \$653,683, compared with \$887,241 in June. Three passenger cars, valued at \$20,036, were exported, as against 21, valued at \$96,100 during the previous month. Detailed figures by countries, as compiled by the Bureau of Foreign and Domestic Commerce, follow:

Countries	Passenger		Freight and Other		Parts of cars Dollars
	Number	Dollars	Number	Dollars	
France	1,647
England	1,050
Canada	2	12,536	8	9,700	16,351
Guatemala	205
Honduras	14	2,300	2,680
Nicaragua	215
Panama	505
Salvador	100
Mexico	10	44,200	13,430
Jamaica	123
Cuba	175	441,584	14,295
Dutch West Indies	750
Dominican Republic	50	66,000	51
Argentina	10,740
Brazil	40	86,803	38,466
Chile	244
Colombia
China	467,698
British India	19,471
Dutch East Indies
Japan	43,635
French Oceania	1	7,500	..	..	..
Philippine Islands	155	18,250	20,311
British West Africa	400
British South Africa	1,316
Portuguese Africa	12	36,444	..
Total	3	20,036	464	705,281	653,683

Extent and Importance of Australian Railways

The mileage of all the railways open for traffic throughout Australia aggregates some 25,652 miles of various gages, according to Weekly Bulletin of the Canadian Department of Trade and Commerce. Their recapitulation is as follows:

	Miles
New South Wales Government Railways	4,824
Victoria Government Railways	4,189
Queensland Government Railways	5,469
South Australia Government Railways	2,289
Western Australia Government Railways	3,538
Tasmania Government Railways	601
Commonwealth Government Railways	1,733
Private companies' railways	3,009
Total Australian railways	25,652

The New South Wales State Railways are practically all of the standard gage, 4 ft. 8½ in. The Victorian State Railways are nearly all of the 5 ft. 3 in. gage. The Queensland State Railways are of the 3 ft. 6 in. gage. The South Australia State Railways comprise 1,080 miles of 5 ft. 3 in. and 1,029 miles of 3 ft. 6 in. gage. The Western Australia State Railways' entire track of 3,353 miles is of 3 ft. 6 in. gage. The Tasmania State Railways are of 3 ft. 6 in. gage. The Commonwealth Government Railways (chiefly in the states of South Australia and Western Australia) comprise 1,051 miles of 4 ft. 6 in., 478 miles of 3 ft. 6 in. and in the Northern Territory 200 miles of 3 ft. 6 in. gage. The private company lines comprise 1,609 miles

of 3 ft. 6 in. gage and 1,070 miles of 2 ft. 6 in. gage. The unaccounted gages are of comparatively unimportant feeder lines varying from 1 ft. 8 in. to 3 ft.

"It is obvious that these government railways require considerable quantities of imported materials of a most comprehensive variety," the Weekly Bulletin comments in conclusion.

French Railways Before the War and Now

Operating expenses of the French railways mounted some 440 per cent during the period 1913-1920, according to information compiled by the Bankers Trust Company, New York. In 1920 the operating expenses of the railways were approximately \$1,380,600,000 (par exchange) as compared with \$225,000,000 in 1913. The enormous increase was due to higher cost of fuel and supplies, increased forces due to shorter hours and to higher wages.

The following table shows the number of railroad employees on the different roads in 1913 and 1920, and the amounts paid in wages:

	Number Employees		Wages (millions of dollars)	
	1913	1920	1913	1920
Northern	53,053	76,632	24.2	105.0
Eastern	54,259	75,326	22.8	94.0
P. L. M.	81,000	118,577	41.8	160.0
Midi	27,489	40,586	8.6	47.8
Orleans	50,338	72,179	19.0	98.0
State	78,805	106,586	32.6	120.2
Totals	344,944	489,886	159.0	625.0

Under the term "wages" are included indemnities growing out of the war which were in 1920 incorporated in the sums paid as wages. There was an increase in wages in 1919 and again in 1920.

The cost of fuel on all roads increased from \$35,000,000 in 1913 to \$398,200,000 in 1920. Total cost of operation of individual roads compares as follows (millions of dollars):

	1913	1920
State	55.4	275.2
Northern	41.2	232.0
Eastern	37.8	174.0
P. L. M.	67.8	366.0
Orleans	36.2	238.0
Midi	16.6	95.4
Totals	255.0	1,380.6

Car Exports in June

June exports of freight cars totaled 536, valued at \$1,096,256, as compared with 465, valued at \$639,454, during the previous month. A total of 21 passenger cars, valued at \$96,100, were also exported, and also parts of cars valued at \$887,241. The detailed figures by countries, as compiled by the Bureau of Foreign and Domestic Commerce, follow:

Countries	Passenger		Freight and Other		Parts of cars Dollars
	Number	Dollars	Number	Dollars	
Belgium					1,631
France					8,184
Netherlands					940
Spain					120
England					6,268
Canada	6	17,500	6	3,388	28,252
Costa Rica					16,705
Guatemala					402
Honduras	3	22,600	106	159,902	1,854
Panama					254
Salvador					854
Mexico	12	56,000	101	222,055	20,397
Newfoundland and Labrador					281
Jamaica					171
Trinidad and Tobago					50
Other Brit. W. Indies					3
Cuba			103	239,369	10,687
Virgin Islands of U.S.					250
Dutch West Indies					971
Dominican Republic			5	3,875	2,246
Bolivia					7,508
Brazil			160	444,167	219,092
Chile					30,287
Peru					7,022
Venezuela					244
China			55	23,500	393,347
Kwantung, leased territory					691
British India					6,069
Hongkong					308
Japan					66,766
Siam					56
Australia					777
New Zealand					32,511
Philippine Islands					20,378
British South Africa					1,665
Portuguese Africa					
Total	21	96,100	536	1,096,256	887,241

Equipment and Supplies

Freight Cars

THE PAULISTA RAILWAY (Brazil) is inquiring through the car builders for 180 freight cars.

Passenger Cars

THE NEW YORK, NEW HAVEN & HARTFORD has bought from the International Motor Company three gasoline motor cars, supported by special trucks, with seating capacity of 35, also compartment for baggage. Delivery of these cars is expected early in December and they will be used in short haul passenger service on branch lines.

Railway Construction

AMERICAN RAILWAY EXPRESS.—This company contemplates the erection of a building at Sweetwater, Tex., to cost about \$10,000.

ATLANTIC COAST LINE.—This company has awarded a contract to the Roberts & Schaefer Company, Chicago, for the construction of a 250-ton, automatic electric coaling plant to be erected at Dothan, Ala.

CADDO RIVER LUMBER COMPANY.—This company, located at Rosboro, Arkansas, will begin the construction on October 1 of a short line railroad connecting with the Missouri Pacific at Womble, Arkansas, and extending northward towards Oden, a distance of 16 miles. The work will cost approximately \$10,000 per mile.

CHICAGO & ALTON.—This company has awarded a contract for the construction of a second track, between Wann, Ill., and Brighton, about 12 miles, to Mulvill Bros., Alton, Ill.

CHICAGO & NORTH WESTERN.—This company is accepting bids for the rebuilding of a 1,900 ft. viaduct across its yards at Proviso, Ill.

CHICAGO, BURLINGTON & QUINCY.—This company has awarded a contract to the Railway Water & Coal Handling Company, Chicago, for the installation of a pipe line in connection with a reservoir being built by company forces at Valier, Ill.

CHICAGO, BURLINGTON & QUINCY.—This company will construct a 30-ft. by 50-ft. brick machine shop at Herrin Junction, Ill., with company forces.

CHICAGO GREAT WESTERN.—This company contemplates the construction of a passenger station at Afton Junction, Iowa.

FLORIDA EAST COAST.—This company will open bids about November 1 for the construction of a general office building at St. Augustine, Fla., to cost approximately \$175,000. The proposed structure will be 50 ft. by 105 ft. and 4 stories in height and will be of terra cotta, marble and brick construction on a concrete frame.

GREAT NORTHERN.—This company has awarded a contract to the F. W. Miller Heating Company, Chicago, for the installation of a boiler washout and refill system at Superior, Wis. The same company has awarded a contract to the National Boiler Washing Company, Chicago, for the installation of a boiler washout and refill system at Great Falls, Mont., and one at Hillyard, Wash.

ILLINOIS CENTRAL.—This company has awarded a contract to the A. Lund Construction Company, Chicago, for the enlarging of the waiting room at the Randolph street suburban station, Chicago, to cost about \$20,000.

INTERSTATE.—This company has awarded a contract to the Brooks-Callaway Company, Atlanta, Ga., for the construction of three tunnels on its Guest river extension. These tunnels will be, respectively, 600 ft., 550 ft. and 350 ft. in length through hard sandstone, slate and shale. It is anticipated that two of the tunnels will require lining, to be done with concrete.

Supply Trade News

Henry S. Lebarge, formerly Chicago representative of the Handlan Buck Manufacturing Company, has been appointed manager of the railroad department of the **H. Channon Company** for Chicago territory, effective October 1.

Theodore Rogatchoff has been elected president of the **Rogatchoff Company**, Baltimore, Md., succeeding A. E. Davis. The company has moved its offices in Baltimore from 205 Water street to 1512 Latrobe terrace.

R. H. Blackall has been appointed railway sales representative for the New York territory of The Lowe Brothers Company, Dayton, Ohio, with offices at 7 East Forty-second street, New York City and Farmers Bank building, Pittsburgh, Pa.

T. N. Gilmore, who for the past sixteen years has been associated with Westinghouse, Church, Kerr and Company, engineers and contractors, has opened offices as a consulting

engineer at 136 Liberty street, New York. Mr. Gilmore was in charge of railroad shop and engine terminal work for Westinghouse, Church, Kerr and Company and was for several years a director and vice-president and chief engineer of the company in charge of all engineering and construction. Mr. Gilmore received his early training in steam railroad work. Prior to the World's Fair at St. Louis in 1904, he went with the St. Louis Terminal where he was in charge of the mechanical and car depart-

ments and in addition planned the power houses, locomotive shops and engine terminal facilities constructed to handle the traffic for the fair. Mr. Gilmore is a member of the American Society of Civil Engineers, the American Society of Mechanical Engineers and the Structural Engineers Association of Illinois.

J. H. McMullen has been appointed railroad representative in the Boston, Mass., territory, for the **Western Electric Company**, succeeding E. R. Morgan and **E. B. Denison**, formerly in charge of the Minneapolis, Minn., territory, has been appointed Detroit, Mich., railroad representative, succeeding R. S. Cowan.

The **English Electric Company of Canada, Ltd.**, a newly-formed company associated with the English Electric Company of Great Britain, has acquired control of the **Canadian Crocker-Wheeler Company, Ltd.** **R. A. Stinson**, vice-president and general manager of the latter company, has been elected president and general manager of the new company.

The **Conewango Car Company**, incorporated in Delaware, has leased the site at Warren, Pa., formerly occupied by the Allegheny Tank Car Company, which plant was partly destroyed by fire on April 6 last. The new company will specialize in repairs to tank cars. In addition to three buildings on the site which were not destroyed by fire, the new company has built a car shop, a machine shop and a sand-blast shop. Shop and yard space is provided for repairing 20 cars at a time, as is storage space for 50 additional cars. The plant is now being equipped with modern machinery and is

expected to be ready for operation by October 1. **N. C. Stiteler** is president and treasurer of the new company and **J. C. Sullivan** is vice-president and general manager.

Obituary

Kenneth Rushton, vice-president in charge of engineering of the Baldwin Locomotive Works, who died on September 2, as was noted in the *Railway Age* of September 10, was born



K. Rushton

60 years ago in Philadelphia, Pa., and was educated in the city schools and Episcopal Academy. He served an apprenticeship, as machinist, under Hugo Bilgram, Philadelphia, and afterward entered the employ of the Baldwin Locomotive Works in April, 1881. Mr. Rushton's association with the Baldwin Locomotive Works continued uninterrupted until the time of his death. He served first as a draftsman, and then as designer, chief of the mechanical engineer and later as vice-president. He was

the inventor of many appliances used in the construction of locomotives, and was closely associated with S. M. Vauclain in the development of the four-cylinder compound that bears the name of the latter. While Mr. Rushton did not travel extensively in the prosecution of his business, he represented Baldwin's abroad in some important missions. In 1913, he was sent to Chile, visiting various points of railroad interest on the west coast of South America, and in 1918 went to France, in connection with the design of railway transport for artillery.

"WE ARE JUST AS RESPONSIBLE as the South Americans for the lull in trade between the two continents," said W. E. Leigh, export manager of the International Western Electric Company upon his return from a five months' trip to Brazil, Uruguay and Argentina. "As long as we refuse to accept the animal and agricultural products which form their main stock in trade, just so long will they find it impossible to buy from us the output of our factories."



Atlantic Type Compound on the Northern Railway (France)

Railway Financial News

BALTIMORE & OHIO.—Asks Authority to Acquire Stock.—Application has been filed with the Interstate Commerce Commission for authority to acquire the entire capital stock of the Indian Creek & Northern from the New England Fuel & Transportation Company at an estimated cost of \$850,000.

COLORADO & SOUTHERN.—Annual Report.—A review of this come account for the year ended December 31, 1920, compares this issue.

GEORGIA RAILROAD & BANKING COMPANY.—Authorized to Issue Bonds.—This company has been authorized by the Interstate Commerce Commission to issue and sell at not less than 95 per cent of par and accrued interest \$1,500,000 of debenture bonds, the proceeds to be used in connection with other funds to pay off and retire a like amount of plain debentures now outstanding.

GRAND TRUNK RAILWAY OF CANADA.—Bonds Sold.—Dillon, Read & Co. and other bankers have sold \$25,000,000, 15-year, 6 per cent sinking fund gold debenture bonds at 95¼ and interest to yield about 6.50 per cent. The issue is dated September 1, 1921, and the Dominion of Canada guarantees principal and interest by endorsement. A sinking fund of \$500,000 annually, accruing from September 1, 1921, is to be available in equal semi-annual amounts for the purchase of the bonds in the market at not exceeding par and interest. If the bonds are not so obtainable any unexpended balance reverts to the railway company. These bonds are the direct obligation of the Grand Trunk Railway Company of Canada, which is controlled by the Government of the Dominion of Canada and forms part of the Canadian National Railways System.

INTERNATIONAL & GREAT NORTHERN.—Annual Report.—The corporate income account for the year ended December 31, 1920, compares with the previous year, as follows:

	1920	1919
Net revenue from operations (September 1 to December 31)	\$2,129,697	1,416,854
Federal rental and Transportation Act guaranty	1,416,854	\$1,394,946
Hire of equipment-credit (September 1 to December 31)	349,916	Def. 51,380
Other corporate income	200,801	
Gross corporate income	\$4,097,268	\$1,343,566
Corporate operating expenses (January and February)	\$10,166	\$60,058
Tax accruals (September 1 to December 31)	119,831	
Hire of equipment-debit (September 1 to December 31)	779,155	
Other corporate deductions	80,737	108,234
Total deductions	\$989,890	\$168,292
Net corporate income	\$3,107,379	\$1,175,274
Interest on funded debt	\$902,043	\$818,793
Interest on unfunded debt	874,149	695,905
Total	\$1,776,192	\$1,514,698
Surplus, carried to profit and loss	\$1,331,187	Def. \$339,424

INDIAN CREEK & NORTHERN.—B. & O. Asks Authority to Acquire Stock.—See Baltimore & Ohio.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—Authorized to Issue Bonds.—The Interstate Commerce Commission has authorized the sale at not less than 97¼ and accrued interest of \$10,000,000, 10-year, 6½ per cent collateral trust gold bonds. The company has also been authorized to issue and pledge as collateral security for these bonds \$12,500,000 of first refunding mortgage bonds and to procure the authentication and delivery to its treasury of \$2,500,000 of first refunding mortgage bonds to be held in the treasury until the further order of the commission.

NORTHERN PACIFIC.—Asks Authority to Abandon Line.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the abandonment of the Washburn Branch extending from Iron River to Washburn, Wis., 33.78 miles.

TEXAS & NEW ORLEANS.—A hearing was held before an examiner of the Interstate Commerce Commission at Washington

on September 21 on this company's application for approval of a lease of the Texas State Railroad.

WHEELING & LAKE ERIE.—Annual Report.—The corporate income account for the year ended December 31, 1920, compares with the previous year, as follows:

	1920	1919
Railway operating revenues (Mar. 1 to Dec. 31)	\$15,747,525	
Railway operating expenses (Mar. 1 to Dec. 31)	13,900,828	
Net revenue from railway operations	1,846,697	
Taxes and uncollectible railway revenue	797,125	
Operating income	1,049,572	
Non-operating income	7,457	
Gross income	1,057,029	\$1,687,327
*Compensation (Jan. and Feb., 1920; year 1919)	264,340	1,592,037
*Guaranty (Mar. 1 to Aug. 31)	1,438,622	
Interest on funded debt	1,217,161	979,224
Total deductions from gross income	2,703,265	1,380,691
Net income	56,725	306,636
Total appropriations	117,187	146,276
Surplus transferred to profit and loss	Def. 60,462	160,360

*Tentative, pending decision as to "just compensation" and other matters in dispute arising out of federal control and guaranty period operations.

The report of the Wheeling & Lake Erie will be reviewed editorially in an early issue.

More Car Trust Certificates Sold

Additional funds have been put at the disposal of the Railroad Administration for use in making settlements with the railroads by the sale of \$20,204,000 of equipment trust certificates, in addition to the \$7,500,000, the sale of which was announced last week. The sale was made by the War Finance Corporation acting as the agent of the Railroad Administration. The certificates were those issued by the Atlantic Coast Line; Atchison, Topeka & Santa Fe; Central of New Jersey; Chicago, Burlington & Quincy; Great Northern; Louisville & Nashville; Norfolk & Western; Pittsburgh & Lake Erie, and Southern Pacific. Of these, \$13,778,000 were sold to White Weld & Co.; Brown Brothers & Co., and Lee, Higginson & Co., and \$6,426,000 to the Prudential Insurance Company. The price was par and accrued interest. The legislation which would authorize the War Finance Corporation to purchase these securities itself is expected to be taken up in the Senate very shortly.

On September 20 announcement was made of an additional sale of \$5,479,500 of these certificates, making a total of \$33,283,500.

Railroad Administration Settlements

The Railroad Administration has made final settlements for the period of federal control and has paid to the following carriers the amounts named: Chicago & North Western, \$6,500,000; Chicago, St. Paul, Minneapolis & Omaha, \$1,200,000; Old Dominion Steamship Company, \$900,000; Wrightsville & Tennille, \$22,500; Louisville & Wadley, \$3,175.

Guaranty Payments

The Treasury Department has announced the following payments to railroads on account of the six months guaranty for 1920: St. Louis-San Francisco, \$200,000; Chicago Junction, \$50,000; Gulf, Texas & Western, \$20,000; Cooperstown & Charlotte Valley, \$15,000; White Sulphur & Huntersville, \$14,000; Sandy River & Rangeley Lakes, \$10,000; Mohassuck Valley, \$10,000; Delaware & Hudson, \$7,500; Greenwich & Johnsonville, \$6,000; Frankfort & Cincinnati, \$5,600.

Dividends Declared

Minneapolis, St. Paul & Sault Ste. Marie.—Common, 3½ per cent, semi-annually; preferred 3½ per cent, semi-annually; both payable October 15 to holders of record September 30.

Northern Pacific.—1¼ per cent, quarterly, payable November 1 to holders of record October 3.

Reading Company.—Common, 2 per cent, quarterly, payable November 10 to holders of record October 18; second preferred, 1 per cent, quarterly, payable October 13 to holders of record September 27.

COUNTRY SAVED—CONSTITUTION VINDICATED.—"Oklahoma City, Sept. 15.—An order forbidding alleged discrimination by the Fred Harvey Corporation and the Atchison, Topeka & Santa Fe Railway was issued today by the State Corporation Commission. It was on a complaint made by Campbell Russell, chairman of this commission, who had been denied the privilege of eating in a Harvey dining room at Purcell, Okla., without wearing his coat."

Annual Report

Colorado & Southern Railway Company—Twenty-Second Annual Report

CHICAGO, January 1, 1921.
To the Stockholders of The Colorado Southern Railway Company:
Herewith is submitted the Twenty-second Annual Report of your Board of Directors for the year ended December 31, 1920, setting forth comparative statements for the fiscal period of The Colorado & Southern Railway Company, Fort Worth & Denver City Railway Company and The Wichita Valley Railway Company.

THE COLORADO & SOUTHERN RAILWAY COMPANY.

COMPARATIVE STATEMENT OF CORPORATE INCOME. YEARS ENDED DECEMBER 31.

1920	1919
\$413,535.30†	\$2,481,211.88
RAILWAY OPERATING REVENUES	
Freight	
Passenger	
Mail	
Express	
All other transportation	
Incidental	
Joint facility	
Total railway operating revenues....	

\$10,212,960.99	\$240,176.18
2,656,946.46	2,921.24
136,820.29	11,708.49
235,162.17	106,990.42
319,228.16	538,000.04*
228,111.58	1,113,733.12
27,511.22	
\$13,816,740.87	\$1,527,334.65
	\$2,319,609.94

RAILWAY OPERATING EXPENSES	
Maintenance of way and structures..	\$6,317.99
Maintenance of equipment.....	
Traffic	
Transportation	
Miscellaneous operations.....	
General	\$43,933.80
Cr..Transportation for investment—Cr..	
Total railway operating expenses....	\$50,251.79
Net	\$2,430,960.09
Railway tax accruals.....	
Uncollectible railway revenue.....	
Railway operating income and standard return....	\$2,430,960.09

NON-OPERATING INCOME	
Equipment rents (net).....	
Dr....Joint facility rents (net).....	
Miscellaneous rents.....	\$59,476.23
Dividends and miscellaneous interest..	1,430,820.99
Miscellaneous income.....	*285,429.38
(Estimated amount due under guaranty Transportation Act, 1920).....	
Total non-operating income.....	\$1,775,726.60
GROSS INCOME.....	\$4,206,686.69

DEDUCTIONS FROM GROSS INCOME	
Miscellaneous rents.....	\$111,959.97
Interest on funded debt.....	2,105,095.45
Interest on unfunded debt.....	1,750.24
Amortization of discount on funded debt	13,539.28
Miscellaneous income charges.....	*190,395.38
Total deductions from gross income...	\$2,422,740.32
Net Income.....	\$1,783,946.37

DISPOSITION OF NET INCOME	
Dividends	\$680,000.00
Total appropriations of income....	\$680,000.00
Income balance transferred to profit and loss.....	\$1,103,946.37

†January and February, 1920. ‡Corporate.
*Includes "Lap-over" items credited and charged by Federal Administration.

FORT WORTH & DENVER CITY RAILWAY COMPANY

COMPARATIVE STATEMENT OF CORPORATE INCOME YEARS ENDED DECEMBER 31

1920	1919
\$315,231.08†	\$1,891,386.40
RAILWAY OPERATING REVENUES	
Freight	
Passenger	
Mail	
Express	
All other transportation	
Incidental	
Joint facility	
Total railway operating revenues....	

7,175,940.38	\$169,755.42
3,457,155.07	8,433.00
134,023.17	3,345.89
151,697.28	4,389.48
103,563.70	132,673.03
174,157.19	270,738.12
348.12	
\$11,196,884.91	\$249,824.10
	\$404,982.65

RAILWAY OPERATING EXPENSES	
Maintenance of way and structures..	
Maintenance of equipment.....	
Traffic	
Transportation	
Miscellaneous Operations.....	
General	\$18,120.69
Cr..Transportation for investment—Cr..	
Total railway operating expenses....	\$18,120.69

\$1,128,498.48	Net	\$1,873,265.71
\$333,160.75	Railway tax accruals.....	
3,062.44	Uncollectible railway revenues.....	
\$792,275.29	Railway operating income and standard return....	\$1,873,265.71

NON-OPERATING INCOME	
Dr....Equipment rents (net).....	
Dr....Joint facility rents (net).....	
Miscellaneous rents.....	
Dividends and miscellaneous interest..	\$33,174.49
Miscellaneous income.....	*95,577.59
(Estimated amount due under Guaranty Transportation Act, 1920).....	
Total non-operating income.....	\$128,752.08
Gross income.....	\$2,002,017.79

DEDUCTIONS FROM GROSS INCOME	
Miscellaneous rents.....	\$18,342.00
Interest on funded debt.....	534,716.29
Interest on unfunded debt.....	2,999.20
Amortization of discount on funded debt	3,261.00
Miscellaneous income charges.....	*127,221.84
Total deductions from gross income..	\$686,540.33
Net income.....	\$1,315,477.46

DISPOSITION OF NET INCOME	
Dividends	\$639,152.32
Total appropriations of income....	\$639,152.32
Income balance transferred to profit and loss....	\$676,325.14

†January and February, 1920. ‡Corporate.
*Includes "Lap-over" items credited and charged by Federal Administration.

THE WICHITA VALLEY RAILWAY COMPANY

COMPARATIVE STATEMENT OF CORPORATE INCOME YEARS ENDED DECEMBER 31

1920	1919
\$58,727.84	\$352,367.05
RAILWAY OPERATING REVENUES	
Freight	
Passenger	
Mail	
Express	
All other transportation	
Incidental	
Total railway operating revenues....	

\$1,015,016.63	
436,800.54	
23,458.49	
34,859.40	
4,445.97	
11,851.43	
\$1,526,432.46	

RAILWAY OPERATING EXPENSES	
Maintenance of way and structures..	
Maintenance of equipment.....	
Traffic	
Transportation	
General	\$2,002.84
Transportation for investment—Cr..	
Total railway operating expenses...	\$2,002.84
Net	\$350,364.21
Railway tax accruals.....	
Uncollectible railway revenue.....	
Railway operating income and standard return....	\$350,364.21

NON-OPERATING INCOME	
Dr....Equipment rents (net).....	
Dr....Joint facility rents (net).....	
Miscellaneous rents.....	\$350.00
Dividends and miscellaneous interest..	702.49
Miscellaneous income.....	*10,709.04
(Estimated amount due under Guaranty Transportation Act, 1920).....	
Total non-operating income.....	\$11,761.53
Gross income.....	\$362,125.74

DEDUCTIONS FROM GROSS INCOME	
Miscellaneous rents.....	\$203,392.80
Interest on funded debt.....	38,450.00
Interest on unfunded debt.....	
Amortization of discount on funded debt	
Miscellaneous income charges.....	*1,875.54
Total deductions from gross income..	\$243,718.34
Income balance transferred to profit and loss....	\$118,407.40

†January and February, 1920. ‡Corporate.
*Includes "Lap-over" items credited and charged by Federal Administration.

[ADVERTISEMENT]

Railway Officers

Executive

H. B. Titcomb, vice-president of the Pacific Electric, with headquarters at Los Angeles, Cal., has been elected president of the Southern Pacific of Mexico and the Arizona Eastern, to succeed Epes Randolph, deceased. Mr. Titcomb was born at Indianapolis, Ind., in December, 1871. He graduated from the Cogswell Polytechnical College in 1891, and in July of the same year entered the service of the Southern Pacific as a draftsman. He was promoted to assistant engineer in the construction division in 1898; was appointed roadmaster on the Western division in 1899, and was successively roadmaster on the Shasta and Sacramento divisions from 1900 to 1904. He was assistant resident engineer from 1904 to 1905, resident engineer at San Joaquin, Cal., from 1905 to 1906, and at Los Angeles from 1906 to 1909. He was district engineer, with headquarters at Los Angeles, from 1909 to 1914, and maintenance of way assistant to the assistant chief engineer, with headquarters at San Francisco from 1914 to 1917. In October, 1917, he was promoted to superintendent of the Stockton division, with headquarters at Stockton, Cal., which position he held until September, 1918, when he resigned to become vice-president of the Pacific Electric.



H. B. Titcomb

Financial, Legal and Accounting

W. E. Fitzgerald has been appointed auditor of the San Antonio & Aransas Pass, with headquarters at San Antonio, Texas, succeeding J. W. Terry, deceased.

G. E. Bramon, auditor of freight accounts of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been appointed auditor of expenditures, succeeding **S. L. Porter**, who will assume the duties formerly performed by Mr. Bramon, effective September 1.

Traffic

W. M. Long has been appointed commercial agent of the Illinois Terminal, with headquarters at Wood River, Ill.

F. F. Seymour, Jr., has been appointed general agent of the Kansas City Southern, with headquarters at Kansas City, Mo., succeeding T. A. Dudley, deceased.

A. S. Edmonds, traffic manager of the Los Angeles & Salt Lake, has been appointed traffic manager of the Oregon-Washington Railroad & Navigation, effective September 1.

Operating

Eugene H. Daniel, assistant to the general superintendent of the Central of Georgia, has been appointed superintendent of transportation with headquarters at Savannah, Ga., effective September 1, and the position of assistant to the general superintendent has been abolished.

Eugene H. Daniel, assistant to the general superintendent of the Central of Georgia, has been appointed superintendent

of transportation with headquarters at Savannah, Ga., effective September 1, and the position of assistant to the general superintendent has been abolished.

E. J. Devans, general superintendent of the Buffalo, Rochester & Pittsburgh with headquarters at Du Bois, Pa., has been appointed superintendent with jurisdiction over the entire system. The positions of general superintendent, division superintendent and superintendent of stations and transfers have been abolished. **M. G. McInerney**, superintendent with headquarters at Rochester, N. Y., has been appointed assistant superintendent with the same headquarters, succeeding **T. C. McCarthy**, who has been appointed chief dispatcher of the Buffalo division. **A. B. White**, superintendent with headquarters at Du Bois, Pa., has been appointed assistant superintendent with headquarters at Punxsutawney, Pa., succeeding **A. H. Stokes**, who has been appointed acting assistant superintendent during the illness of R. L. Moore, assistant superintendent. **H. E. Patterson**, assistant superintendent with headquarters at Rochester, N. Y., has been transferred to a similar position with headquarters at East Salamanca, N. Y. These changes were effective on September 1.

W. H. Newell, Jr., whose appointment as superintendent of the Atlantic Coast Line with headquarters at Wilmington, N. C., was announced in the *Railway Age* of September 17 (page 556), was born at Wilmington on February 27, 1884, and was educated in the grammar schools of that city and Portsmouth, Va., and the Portsmouth Academy. He entered railroad service on September 1, 1898, as a messenger and operator in the superintendent's office of the Atlantic Coast Line. From September, 1899, to January, 1903, he served in the office of the general agent at Norfolk and Pinners Point, Va., consecutively as receiving clerk, billing clerk, loading clerk, baggage agent, ticket agent and assistant cashier. In January, 1903, he became a flagman on the Norfolk & Carolina (a branch of the Atlantic Coast Line). In April of the same year he was transferred to the Wilmington district and served consecutively as flagman, baggageman, freight and passenger conductor and station master of Wilmington Union Station, until May 1, 1918, when he was appointed trainmaster of the Norfolk district with headquarters at Tarboro, N. C. In September of the same year he was transferred in the same capacity to Pinners Point, Va., in charge of the Southern and Atlantic Coast Line terminals which were under unification. In April, 1919, he was transferred as trainmaster of the Atlantic Coast Line and Seaboard Air Line terminals (also under unification) at Wilmington (N. C.), which position he was holding at the time of his recent promotion.



W. H. Newell, Jr.

Engineering, Maintenance of Way and Signaling

J. H. Moore, signal supervisor of the Rochester division of the Buffalo, Rochester & Pittsburgh, has had his jurisdiction extended to include the Buffalo division with headquarters at East Salamanca, N. Y., succeeding **A. J. Darrow**, who has been assigned to other duties, effective September 1.

Obituary

S. B. Howard, general agent of the homeseekers bureau of the Chicago, Burlington & Quincy, died at Omaha, Neb., on September 17. He was 64 years of age and had been with the Burlington since 1907.